ENERGY AND ENVIRONMENT CABINET

Department for Environmental Protection

Division of Water

(Amended After Comments)

401 KAR 6:310 Water supply well construction practices and standards.

RELATES TO: KRS 223.400-[through] 223.460[223.400-223.460], 223.991, 224.1-010, 224.1-400[224.01-010, 224.01-400, EO 2008-507, 2008-531]

STATUTORY AUTHORITY: KRS[§54.140] 223.420(1)(e), 223.435, 224.10-100, 224.70-100, 224.70-110

NECESSITY, FUNCTION AND CONFORMITY: KRS 224.10-100, 224.70-100, and 224.70-110 authorize the cabinet to establish administrative regulations to protect water quality. KRS 223.435 requires the cabinet to promulgate administrative regulations establishing standards of practice for water well construction.[EO 2008-507 and 2008-531, effective June 16, 2008, abolish the Environmental and Public Protection Cabinet and establish the new Energy and Environment Cabinet.] This administrative regulation provides minimum standards and requirements for construction, modification, and abandonment of water supply wells.

Section 1. General Requirements. (1)[Certified water supply well driller requirement:]

Each water supply well subject to this administrative regulation shall be constructed, modified, or abandoned only by a certified water supply well driller or certified well driller assistant as established in[natural persons certified to drill water supply wells in accordance with] KRS
223.425 and 401 KAR 6:320.

(2) A water supply well driller's assistant shall work under the "direct supervision", as defined by 401 KAR 6:001(14), of a certified water supply well driller.

(3) Well specifications shall be:

(a) [B] Provided by the certified well driller to the well driller's assistant[, as required] under "direct supervision" as defined by 401 KAR 6:001(14), for the work to be conducted including:

1. Construction;
2. Alteration;
3. Maintenance;
4. Repair;
5. Reworking;
6. Development;
7. Abandonment; or
8. Plugging; and

(b) [S] [h] [a] [l] [l] [l] [b] [e] [ ] Recorded on the Uniform Kentucky Well Construction Record, which shall be:

1. Retained by the water supply well driller's assistant; and
2. Available for inspection upon request by the cabinet.

(4) [e] Changes made to water supply well specifications during any work being conducted on a water supply well shall be:

1. Approved in advance by a certified water supply well driller;
2. Recorded on an amended Uniform Kentucky Well Construction Record:
3. Retained by the water supply well driller’s assistant; and

4. Available for inspection upon request by the cabinet.

(5) Construction and well performance requirement. Permanent and temporary water supply wells shall be constructed, modified, and abandoned in such a manner that prevents the introduction or migration of contamination to a water-bearing zone or aquifer through the casing, drill hole, or annular materials.

(6) Reporting requirement. Within sixty (60) days after a water supply well has been completed, modified, or abandoned, the certified water supply well driller shall submit a report of well construction, modification, or abandonment to the cabinet using the Uniform Kentucky Well Construction Record or the Uniform Kentucky Well Maintenance and Plugging Record, as appropriate. The report shall include:

(a) All information about the depth and the materials used in the water supply well construction, modification, or abandonment; and shall also be recorded.

(b) The certified water supply well driller shall complete the bacteriological section on the Uniform Kentucky Well Construction Record to report the results of the bacteriological [escherichia coli] sampling as established [required] in Section 9(6) of this administrative regulation. [The certified driller shall retain the results of the bacteriological sample analysis.]

(7) Records to water supply well owner. Within sixty (60) days after the water supply well has been completed or modified, the certified water well driller shall provide the following material to the well owner:

(a) A copy of the Uniform Kentucky Well Construction Record or the Uniform Kentucky Well Maintenance and Plugging Record submitted to the cabinet, as appropriate;

(b) A copy of the Results of bacteriological sample analysis collected in accordance with
Section 9(6) of this administrative regulation;

(c) Water Well Owner’s Guide; and

(d) [A copy of] Analytical results if additional water quality analysis is conducted.

(8)(7)(5) The certified well driller shall tag] Each well constructed or modified shall be tagged with a well identification number tag provided by the cabinet.

(a) An existing well identification number shall be included on the Uniform Kentucky Well Maintenance and Plugging Record for any well being modified or abandoned.

(b) If a well identification number does not exist at the time of modification or abandonment, the well shall be tagged[certified driller shall tag the well, as appropriate.] and [include] the well identification number assigned shall be recorded on the Uniform Kentucky Well Maintenance and Plugging Record.

(9)(8)(6) Variances. If conditions exist or are believed to exist that preclude compliance with the requirements established in[of] this administrative regulation, the certified water supply well driller may request a variance prior to well construction, modification, or abandonment. The variance request shall be submitted to the cabinet on the Kentucky Water Well Variance Request form.

(a) The variance request shall include[the following]:

1. A thorough description of the land use at the site and adjacent properties;

2. The distance between the proposed well location and existing water supply wells and monitoring wells on adjacent properties;

3. The distance between the proposed well location and potential pollution sources, both on site and on adjacent properties, including septic systems, sewers, and petroleum and chemical storage tanks;
4. A description of the geologic conditions at the site, including soil thickness, type of
bedrock, perched water, confining zones, and the depth to groundwater;

5. A summary of the provisions, including the section numbers of this administrative
regulation, for which the variance is requested;

6. A justification for the variance; and

7. a. The proposed well construction procedures to be used in lieu of compliance with this
administrative regulation; and

b. An explanation of how the alternate well construction procedures ensure the
protection of the quality of the groundwater and the protection of public health and safety.

(b) Written variance procedure.

1. The certified water supply well driller shall request a variance by submitting to the
cabinet a Water Well Variance Request form signed by the certified water supply well driller and
water supply well owner, and shall obtain written cabinet approval before well construction
begins.

[1. The driller shall submit the Kentucky Water Well Variance Request form, signed by
the certified driller and well owner, and obtain written cabinet approval before well construction
begins.]

2. The cabinet shall notify the applicant in writing within ten (10) days of its decision to
either grant or deny the variance.

3. The cabinet shall not issue a variance if the proposed water supply well construction
will not ensure the protection of groundwater quality and public health and safety.

(c) Verbal variance for an emergency.

1. A certified water supply well driller may request a verbal variance for an emergency if
the delay incurred due to the written variance procedure in paragraph (b) of this subsection could[may] result in:

a. Loss of access to potable water for the intended user;

b. Failure to address an existing or impending environmental emergency in accordance with KRS 224.1-400[224.01-400]; or

c. A risk to public health or safety.

2. The cabinet shall not issue a variance for an emergency if the proposed water supply well construction will not ensure the protection of groundwater quality and public health and safety.

3. Within fifteen (15) days of the date the cabinet approves the verbal variance for an emergency, the certified water well driller shall submit to the cabinet a Kentucky Water Well Variance Request form[s] signed by the certified water supply well driller and water supply well owner[ies] to the cabinet.

(d) The variance approval shall list the conditions of the variance, including the:

1. [The] Approved alternate well construction procedures;

2. [The] Well sampling requirements; and

3. [The] Requirement to notify surrounding property and well owners of the variance, if applicable.

(e) Within sixty (60) days of completing the well, the certified water supply well driller shall submit to the cabinet a copy of the Kentucky Water Well Variance Request form[s] signed by the certified water supply well driller and the water supply well owner[ies] to the cabinet within sixty (60) days after the well is completed.

(f) 1. After a variance is issued regarding the location of a well with respect to various
pollution sources as established in Section 5(1) of this administrative regulation, the certified well driller for which a variance has been issued shall collect water samples from the well shall be collected and have these samples analyzed for the parameters as stated in the Kentucky Water Well Variance Request variance approval letter issued by the cabinet.

2. The certified water well driller shall submit a copy of the analytical results on the Water Well Bacterial Report and Chain of Custody form to the well owner and the cabinet within ten (10) days of the receipt of the analytical results from the laboratory.

Section 2. Construction Materials and Requirements. (1) All materials to be used for the construction, modification, or abandonment of water supply wells shall be approved for use in water wells by the one (1) or more of the following:

(a) National Sanitation Foundation (N.S.F.) (NSF);
(b) American Society for Testing and Materials (A.S.T.M.) (ASTM); or
(c) American Petroleum Institute.

(2) Permanent well casing and liners.

(a) Well casing and liners shall be able to withstand the physical forces acting upon them during and following their installation and during their use including forces:—This includes forces

1. Due to suspension in the borehole, grouting, development, purging, pumping, or sampling; and

2. [forces] Exerted on the well casing and liners by the surrounding geologic materials.

(b) Steel or PVC well casing and liners shall have a minimum inside diameter of four (4) inches, except for driven point wells and jetted wells as established which are addressed in Section 8(3) of this administrative regulation.
(c) The certified well driller shall install well casing and liners shall be installed in accordance with manufacturer specifications.

(d) The certified well driller shall not install used, damaged, or contaminated well casing or liner pipe shall not be installed.

(e) Steel well casing and liners.

1. Steel well casing and liners shall meet or exceed the minimum standards established[provided] in Table A of this administrative regulation.

<table>
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<th>Table A: Casing and Liner Pipe Weights and Dimensions</th>
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2. Joints and couplings shall be welded or threaded.

3. Joints shall be watertight.

(f) PVC well casing and liners.

1. PVC well casing and liners shall:

a. Meet[or exceed] the minimum standards established[provided] in Table B of this administrative regulation;

<table>
<thead>
<tr>
<th>Table B: PVC Casing and Liner Pipe Specifications</th>
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<td>Size (inches)</td>
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</table>

b. [Have minimum Standard Dimension Ratio (SDR) 26;]

e. [Have a minimum Impact Classification of IC-1 in accordance with A.S.T.M.]

Standard F480-14: and

c. [d-] At a minimum, meet; [or exceed]


(ii) N.S.F. [e. Meet or exceed the National Sanitation Foundation [(NSF)] Standard 14-2018[44] for potable water applications found in N.S.F. [National Sanitation Foundation (N.S.F. -)] Standard 14-2018[44], Plastics Piping System Components and Related Materials; and

(iii) N.S.F. [f. Meet or exceed the NSF Standard 61 found in National Sanitation Foundation (N.S.F. -)] Standard 61-2018, Drinking Water System Components – Health Effects [61, Drinking-Water System Components Health Effects].
2. Joints and couplings shall be welded, cemented, or threaded.

3. Joints shall be watertight.

4. PVC casing shall not be driven or pushed by force of the rig, either by direct hydraulic force or by hammer.

(3)(a) Temporary outer casing. Temporary outer casing used during well construction shall be sufficiently strong to permit installation without distorting or rupturing, and shall be removed upon well completion.

(b) If[the driller determines that] temporary outer casing is to be used as permanent outer casing, the temporary outer casing shall be grouted in place.

(4) Well screens.

(a) 1. Well screens shall be capable of withstanding the stress to which the pipe will be subjected and the corrosiveness of the water with which it comes in contact.

2. Used, damaged, or contaminated well screens shall not be installed.

(b) Steel or PVC well screens with a minimum inside diameter of four (4) inches shall be installed, except for bored, driven, or jetted wells.

(c) Well screens shall be:

1. Installed in accordance with the manufacturer's specifications; and[.]

2. [Wells screens shall be] Centered in the borehole.

(d) [Steel screens. Joints and couplings shall be welded or threaded.]

(e) [PVC screens shall:

1. Have minimum Standard Dimension Ratio (SDR) 26;

2. Have a minimum Impact Classification of IC-1 in accordance with A.S.T.M. Standard F480-14;]
3. At a minimum, meet:[or exceed]

   A.S.T.M.[American Society for Testing and Materials (A.S.T.M.)] Specification D1784-
   11[D1784-07], Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and
   Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds and A.S.T.M.[American Society for
   Thermoplastic Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR),
   SCH 40 and SCH 80; and

   b. N.S.F.[4-Meet or exceed the NSF] Standard 14-2018[14] for potable water applications
   found in N.S.F.[National Sanitation Foundation (N.S.F.)] Standard 14-2018[14], Plastics Piping
   System Components and Related Materials and rated potable water (PW) or well casing (WC);

   and

   4.[5]. Joints and couplings shall be welded, cemented, or threaded.

   (f)[5] Screen slot size shall be selected to prevent the entry of sediment or other harmful
   material into the well.

   (5) Air rotary drilling. Water shall be injected into the air stream at a rate sufficient to
   eliminate dust and to keep the borehole clean of cuttings.

   (6) Mud rotary drilling[6]. Pits to contain or re-circulate drilling fluids shall be
   constructed in a manner as to isolate the drilling fluid from runoff to a stream or other waterway.

   (7)[Lead-] Materials containing lead shall not be used in the construction of a water
   supply well.

   Section 3. Sealing Materials. (1)[Mixing:] Sealing materials and additives that control or
   affect setting times or physical properties of the sealing materials shall be mixed in accordance
with the manufacturer’s specifications.

(2) Application. Grouting shall be performed using the grout-pipe method or a pressure
grouting device to add the sealing materials and other materials used to seal the annulus from the
bottom of the annulus upward in one (1) continuous operation until the annulus is filled to two
(2) feet below the surface or to the point of pitless adapter attachment. If temporary or permanent
outer casing is used, sealing materials shall[may] be added prior to installing the inner casing.

(a) Cement and concrete grout. The appropriate type of neat cement and concrete grout
for the conditions present in the well shall be used in accordance with the manufacturer’s
specifications and this subsection[guidelines].

(b) Neat cement-bentonite grout. Neat cement-bentonite grout shall set for a minimum of
seventy two (72) hours prior to resuming drilling operations.

(c)[†] Bentonite grout.

1. Bentonite grout shall set until the slurry has hydrated according to the manufacturer’s
specifications.

2. Bentonite grout shall not be used if chlorides in groundwater exceed 1,000 parts per
million (ppm).

(d) Reduced setting time. Setting time may be reduced with additives if used in
accordance with the manufacturer’s specifications.

(e) Bentonite in pellet, chip, or granular form. If bentonite pellets, chips, or granules
are placed above the water table[†], the certified driller shall comply with the following:

- Dry bentonite pellets, chips, or granules shall be placed in increments not greater
than two (2) feet in thickness to provide proper hydration and prevent bridging; and
b. Each increment shall be hydrated prior to the continued placement of dry bentonite pellets, chips, or granules.

3. Bentonite pellets, chips, or granules shall not be used if chlorides in groundwater exceed 1,000 parts per million (ppm).

(f) Construction water. Water used in the drilling or decontamination process shall be potable.

(g) 1. Drill cuttings. [The certified well driller may use] Clay, shale, or limestone drill cuttings may be used if cuttings are allowed to seal portions of the annulus.

2. Sandstone cuttings shall not be used.

Section 4. Design Factors. Each well shall be constructed to include the following:

(1) Natural protection. The well shall be located to protect groundwater quality and public health and safety.

(2) Geologic formations.

(a) The well construction shall be adapted to the local or site-specific geologic formations and groundwater conditions.

(b) Undesirable groundwater shall be cased off or otherwise prevented from contributing to a well.

(3) Capacity. The well shall be constructed to optimize yield while maintaining the safe functioning and integrity of the aquifer.

(4) Pitless well adapters.

(a) A well casing shall not be cut off or cut into below finished ground surface except by a certified water supply well driller to install a pitless well adapter, a pitless well unit, or to make modifications.
(b) Construction or installation of pitless well adapters or pitless well units shall be done in such a manner as to provide a leak-proof seal. If a frost-free hydrant is installed, a Double[Dual] Check Valve Backflow Preventer that meets the specifications of American Society of Sanitary Engineering (A.S.S.E.) 1015-2011[1024] Performance Requirements for Double[Dual] Check Backflow Prevention Assemblies[Preventers] shall be installed between the pitless adapter and the frost-free hydrant[1,].

(5) Flowing artesian wells. A flowing artesian well shall be constructed to:

(a) Maintain the head pressure within the aquifer; and

(b) Prevent an uncontrolled discharge of groundwater into the environment; and[1]

(6)[(5) Accessibility.] The well shall be constructed to allow access for repairs, maintenance, treatment, and inspection.

Section 5. Setback requirements. (1) Wells shall be installed[in accordance] with the minimum lateral distances between the well and potential pollution sources established in Table C of this administrative regulation.

<table>
<thead>
<tr>
<th>Table C: Setback Requirements</th>
<th>Minimum Distances</th>
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<tbody>
<tr>
<td>Lateral Sources of Contamination</td>
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<tr>
<td>Leaching Pit</td>
<td>100 Feet</td>
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<tr>
<td>Petroleum Storage Tank</td>
<td>100 Feet</td>
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<tr>
<td>Grave or Cemetery</td>
<td>75 Feet</td>
</tr>
<tr>
<td>Manure Pile, Animal Waste Storage, or Confined Animal Feeding Operation</td>
<td>75 Feet</td>
</tr>
<tr>
<td>Wastewater Treatment Disposal System</td>
<td>75 Feet</td>
</tr>
<tr>
<td>Side Wall of Lateral Trench, Bed, or Lagoon</td>
<td>70 Feet</td>
</tr>
<tr>
<td>Geothermal – Closed Loop, Ungrouted</td>
<td>70 Feet</td>
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<tr>
<td>Water Supply Well</td>
<td>50 Feet</td>
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<tr>
<td>Septic Tank or Sewer Line</td>
<td>50 Feet</td>
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</tbody>
</table>
Livestock Pen, Corral, or Stable & 50 Feet
Surface Water Body & 25 Feet
Geothermal – Closed Loop, Grouted; Abandoned Water Well Grouted & 20 Feet
Property Lines, Utility Lines, or Roadway Right of Way & 10 feet

(2) The certified water supply well driller shall evaluate land-use activities, both on the property on which the well is to be located and on adjacent properties, and identify other potential pollution sources not listed subsection (1) of this section.

(3) If the unconsolidated material is less than twenty (20) feet thick and composed of predominantly sand or gravel, the minimum lateral distances established in subsection (1) of this section shall be doubled.

(4) A well may be constructed in an identified special flood hazard area if an alternate site does not exist.

(5) The certified well driller shall terminate The casing shall be terminated:

(a) A minimum of two (2) feet above the highest base flood elevation at the site; and

(b) Any known conditions of flooding by drainage or run-off from the surrounding land.

(6) The well extended vertically shall clear a projection from a building by a minimum of five (5) feet.

(7) Wells shall not be constructed in pits or basements.

Section 6. Wells Drilled into Consolidated Formations Using the Cable Tool, Air Rotary, Mud Rotary, Reverse Rotary, or Sonic Methods. (1) Borehole construction. (a) The diameter of the borehole shall be a minimum of 1.75 inches greater than the outer diameter of the casing.

(b) Steel casing may be driven or advanced through unconsolidated material without
over-drilling using the dry-driven grout method in accordance with Section 8(2) of this administrative regulation.

(c) The borehole diameter of the open-hole portion of the well shall be smaller than the inside diameter of the lowermost permanent casing so that the:

1. Permanent casing can rest on the shoulder of the open borehole.
2. Lower portion of the permanent casing can be properly sealed.

(d) Plumbness and alignment. The borehole shall:

1. Be sufficiently plumb and straight to receive well casing, liner, and screen without binding. and
2. Not interfere with the installation and operation of the pump.

(2) Casing installation.

(a) Casing shall extend below the surface a minimum of twenty (20) feet.

(b) Single-cased wells.

1. [Unconsolidated material thirty (30) feet thick or less.] If unconsolidated material is thirty (30) feet thick or less, the certified well driller shall install casing extending a minimum of ten (10) feet into bedrock.

2. [Unconsolidated material greater than thirty (30) feet thick.] If unconsolidated material is greater than thirty (30) feet thick, the certified well driller shall install casing extending a minimum of two (2) feet into bedrock.

3. [Fractures, crevices, voids, and undesirable geologic formations.] Permanent casing shall be installed a minimum of two (2) feet below any fractures, crevices, voids, or undesirable geologic formations that may introduce harmful materials, pollutants, or undesirable groundwater to the well.
4. [The certified driller shall cease off] Undesirable water-bearing formations shall be cased off leaving a minimum of two (2) feet below the bottom of the production zone.

(c) Multiple-cased wells.

1. [a] Temporary outer casing shall:

   a. Have an inside diameter of temporary outer casing shall be a minimum of two (2) inches greater than the outside diameter of the inner casing;

   b. Temporary outer casing shall be removed prior to well completion; and

   c. If the driller determines that temporary outer casing is to be used as permanent outer casing, the temporary outer casing shall be grouted in place.

2. [Permanent outer casing] The inside diameter of permanent outer casing shall be a minimum of two (2) inches greater than the outside diameter of the inner casing.

3. [Inner casing] The certified well driller shall install] Permanent inner casing shall be installed in accordance with the requirements established in subsection (2)(b) of this section.

   (3) Screen and liner installation.

   (a) [If a screen or liner is installed] Screen or liner slot size shall be selected to prevent the entry of fine-grained sediment and other anticipated harmful material into the well.

   (b) Screens and liners shall conform to the requirements established in Section 2 of this administrative regulation.

(4) Filter pack. (a) An artificial filter pack [is installed, the filter pack] shall meet the following criteria:

1. [Filter pack material] Be of a size that works in conjunction with the well screen to prevent the entry of fine material and sediment into the well;

2. [Filter pack material shall] Be disinfected prior to placement in the well or shall be
disinfected in the well; and

3. (e) The filter pack shall extend a minimum of two (2) feet above the screen.

3. (b) Filter pack refill pipes may be installed if refill pipes:

1. Terminate above finished ground surface;

2. Are provided with a watertight cap and

3. Are sealed in the annulus.

(5) Annular seal.

(a) The certified well driller shall seal the annulus shall be sealed in a manner that prevents the migration of pollutants through the annulus and the annulus by one (1) of the following methods:

1. Sealing the entire annulus with sealing materials;

2. Sealing a minimum of the bottom two (2) feet of the annulus between the borehole and the permanent casing and sealing the remainder of the annulus with impervious drill cuttings, sealing materials, native clay, or a combination of these materials; or

3. Using the methods in subparagraphs 1 or 2 of this paragraph in combination with a mechanical packer.

(b) Single-cased wells.

1. Open-hole construction.

a. The bottom two (2) feet of the annulus shall be sealed with sealing materials; and shall seal the

b. The remainder of the annulus shall be filled with impervious drill cuttings, sealing materials, native clay, or a combination of these materials.

2. Screened construction.
1. The bottom two (2) feet above the filter pack shall be sealed with sealing materials; and[shall-seal]

b. The remainder of the annulus shall be filled with[impervious] drill cuttings, sealing materials, native clay, or a combination of these materials.

c. Multiple-cased wells.

1. Temporary outer casing.

a. The[certified-well-driller-shall-seal-the] annulus shall be sealed below the temporary outer casing prior to removal of the temporary outer casing; and[.]

b. The[certified-well-driller-shall-seal-the] remainder of the annulus shall be filled in the zone where temporary outer casing was used upon removal of the temporary outer casing.

2. Permanent outer casing.[The-certified-well-driller-shall-seal]

a. The annulus shall be sealed between the borehole and permanent outer casing at the installation of the permanent outer casing.[-The-certified-well-driller-shall-seal]

b. The bottom two (2) feet of the annulus shall be sealed between the bore hole and the permanent outer casing with sealing materials; and[shall-seal]

c. The remainder of the annulus shall be filled with[impervious] drill cuttings, sealing materials, native clay, or a combination of these materials.

3. Inner casing.[The-certified-well-driller-shall-seal]

a. The entire annulus shall be sealed around the inner casing, including the annulus between the outer and inner casing;-[The-certified-well-driller-shall-seal]

b. The bottom two (2) feet of the annulus shall be sealed between the outer casing and the inner casing with sealing materials; and[shall-seal]

c. The remainder of the annulus shall be filled with[impervious] drill cuttings, sealing
Section 7. Wells Drilled in Unconsolidated Formations. (1) Borehole construction.
(a) The borehole diameter shall be a minimum of four (4) inches greater than the outside
diameter of the well casing and screen; or
(b) Steel casing may be driven or advanced without over-drilling using the dry-driven
gROUT method in accordance with Section 8(2) of this administrative regulation.
(c) Plumbness and alignment. The borehole shall;
   a. Be sufficiently plumb and straight to receive well casing, liner, and screen without
      binding; and[shall]
   b. Not interfere with the installation and operation of the pump.
(2) Casing installation.
(a) Single-cased wells. A minimum of twenty (20) feet of permanent casing shall be
installed below finished ground surface excluding the screened interval.
(b) Multiple-cased wells.
1. Temporary outer casing.
   a.[(a)] The inside diameter of temporary outer casing shall be a minimum of four (4)
inches greater than the outside diameter of the inner casing.
   b.[(b)] Temporary outer casing shall be removed prior to well completion.
2. Permanent outer casing. The inside diameter of permanent outer casing shall be a mini-
mum of four (4) inches greater than the outside diameter of the inner casing.
3. Inner casing. A minimum of twenty (20) feet of permanent inner casing shall be
installed below finished ground surface excluding the screened interval.
(3)[Screen installation:] Screen slot size shall[be selected to] prevent the entry of fine
sediment or other harmful material into the well.

(4) Filter pack. The natural formation may be developed to serve as a filter pack, or an artificial filter pack shall be installed.

(a) The artificial filter pack shall meet the following criteria:

1. Filter pack material shall be sized to prevent the entry of fine sediment or other harmful material into the well;

2. Be disinfected prior to placement in the well, or disinfected in place; and

3. Extend a minimum of two (2) feet above the screen and

(b) Filter pack refill pipes may be installed if they:

1. Terminate above finished ground surface and

2. Are provided with a watertight cap and

3. Are sealed in the annulus.

(5) Annular seal.

(a) The annulus shall be sealed in a manner that prevents the migration of groundwater and pollutants through the annulus and the certified well driller shall seal the annulus by one of the following methods:

1. Sealing the entire annulus with sealing materials;

2. Sealing the:

   a. Two (2) feet of annulus directly above the filter pack with sealing materials;

   and

   b. Remainder of the annulus with drill cuttings, sealing materials, native clay, or a combination of these materials; or

3. Sealing the entire annulus with materials that meet the criteria of this section; or

4. Sealing the annulus according to an approved plan or method that is designed and performed under the supervision of a certified well driller.
3. Using the method established in subparagraph 2. of this paragraph in combination with a mechanical packer.

(b) Single-cased wells.

1. [The certified well driller shall seal] The annulus shall be sealed by sealing the using one (1) of the following methods:

   a. [Sealing the] Entire annulus with sealing materials; or

   b. (i) [Sealing the] Two (2) feet of annulus directly above the filter pack with sealing materials; and

      (ii) [Sealing the] Remainder of the annulus with drill cuttings, sealing materials, native clay, or a combination of these materials.

2. The annular seal shall extend to a minimum depth of eighteen (18) feet below finished ground surface.

(c) Multiple-cased wells.

1. Temporary outer casing. [The certified well driller shall seal]

   a. The bottom two (2) feet of the annulus shall be sealed above the filter pack with sealing materials; and

   b. The remainder of the annulus shall be sealed below the temporary outer casing with drill cuttings, sealing materials, native clay, or a combination of these materials prior to removal of the temporary outer casing.

2. Permanent outer casing. [The certified well driller shall seal the]

   a. The bottom two (2) feet of the annulus shall be sealed between the borehole and permanent outer casing above the filter pack with sealing materials; and

   b. The remainder of the annulus shall be sealed between the borehole and permanent
outer casing with drill cuttings, sealing materials, native clay, or a combination of these materials at the installation of the permanent outer casing.

3. Inner casing. [The certified well driller shall seal]

a. The bottom two (2) feet of the annulus shall be sealed between the inner casing and outer casing with sealing materials; and

b. The remainder of the annulus shall be sealed between the inner casing and outer casing with drill cuttings, sealing materials, native clay, or a combination of these materials.

Section 8. Special Well Types. Wells in this classification shall include bored, driven, irrigation, and radial collector wells.

(1) Bored well construction. Bored wells shall be constructed using the concrete-collar or the buried-slab method.

(a) [Borehole diameter.] The borehole diameter shall be a minimum of four (4) inches greater than the outside diameter of the well casing or precast concrete tiles used below the buried-slab or concrete-collar method.

(b) [Casing materials.] Casing materials for bored wells shall consist of pre-cast concrete tiles or corrugated fiberglass casing that meet the material construction standards established in Section 2 of this administrative regulation.

(c) Filter pack. The natural formation may serve as a filter pack, or an artificial filter pack may be installed in the annulus below the buried slab. [The filter pack shall meet the following criteria:]

1. An [The] artificial filter pack [material] shall;

   a. Be sized to prevent the entry of fine-grained sediment and other material into the
b. Be free from clay, silt, or other deleterious material;
c. Artificial filter pack material shall be disinfected prior to placement in the well; and
d. The filter pack shall not extend above the buried slab or concrete collar;

2. Filter pack refill pipes shall be installed if they terminate above finished ground surface. shall be provided with a watertight cap, and shall be sealed in the annulus.

d. Bored well construction using the buried-slab method.

1. The buried slab shall:

a. Be a minimum of ten (10) feet below ground surface;

b. Consist of reinforced concrete constructed without joints;

c. Have a diameter sufficient to extend to the outer edge of the casing or tiles installed below the buried slab.

2. The top of the buried slab shall slope away from the center and shall provide a watertight joint where the buried slab rests on the well casing.

3. A coupling shall be cast in the buried slab in which to install the upper well casing.

4. The joint between the well casing and coupling shall be watertight.

5. Bentonite seal. A bentonite seal shall be:

a. Installed above the buried slab that extends the entire diameter of the borehole;

b. A minimum of twelve (12) inches thick.

6. Upper well casing shall:

a. Be installed above the buried slab to
extend a minimum of eight (8) inches above the ground surface;[

b. Have an[The] inside diameter of at least[the casing shall be a minimum of] four (4)

inches;[

c.[The upper casing shall] Conform to the requirements of Section 2 of this

administrative regulation; and

d.[shall] Have only threaded or welded joints.

7.[9] Pitless adapter.

a. [If a pitless adapter is installed, installation of the] pitless adapter[adapters] shall be

installed so that it provides[done in such a manner as to provide] a leak-proof seal.

b. If a frost-free hydrant is installed, a Double[Dual] Check Valve Backflow Preventer

that meets the specifications of A.S.S.E.[American Society of Sanitary Engineering (A.S.S.E.)]

1015-2011][1024] Performance Requirements for Double[Dual] Check Backflow Prevention

Assemblies[Preventers] shall be installed between the pitless adapter and the frost-free hydrant.

8.[49] The annulus fill for the upper casing above the bentonite seal shall consist of

sealing materials or clean, inert earth materials.

9.[41] The certified well driller shall install] A water-tight well cap shall be installed at

the top of casing.

(e) Bored well construction with concrete-collar method.

1. The upper ten (10) feet of the borehole diameter shall be a minimum of six (6) inches

greater than the outside diameter of the well casing.

2. The annular space in the upper ten (10) feet of the borehole between the excavation

and the installed concrete collar casing shall be sealed with concrete or sealing materials.

3. The diameter of the borehole below the grouting shall be a minimum of four (4) inches
greater than the outside diameter of the well casing.

4. The casing shall extend a minimum of eight (8) inches above the finished ground surface.

5. The cover slab shall be a minimum of four (4) inches thick.

6. A pipe sleeve shall be cast in place in the slab to accommodate the type of pump or pump piping to be used for the well.

7. A watertight joint shall be made where the slab rests on the well casing.

(2) Dry-driven grout method.

(a) General.

1. Steel casing may be driven using the dry-driven grout method.

2. PVC casing shall not be driven or pushed by force of the rig, either by direct hydraulic force or by hammer.

(b) Pilot hole. A pilot hole shall be constructed a minimum of three (3) feet deep and a minimum of six (6) inches larger in diameter than the outside diameter of the casing to be driven.

(c) Casing installation.

1. Dry bentonite granules no less [not smaller] than fifty (50) mesh and no more [not larger] than eight (8) mesh shall be poured into the pilot hole prior to driving the casing.

2. Bentonite shall continue to be poured into the pilot hole as the casing is driven and bentonite is drawn into the annulus.

(3) Driven point wells and jetted wells. Driven point wells and jetted wells shall be used for temporary dewatering purposes only.

(a) The well point, drive pipe, and joints shall be structurally suitable to prevent rupture or distortion during driving.
(b) Driven point wells and jetted wells shall not supply water for human consumption.

(e) Driven point wells shall have a water-tight cap.

(c) Driven point wells and jetted wells shall:

1. Not supply water for human consumption; and

2. Be abandoned in accordance with Section 11 of this administrative regulation.

(4) Radial collector wells.

(a) The certified water well driller shall submit plans for a proposed radial collector well to the cabinet and receive written approval prior to construction of a radial collector well.

(b) Factors that shall be considered for approval of a radial collector well include:

1. Depth of the well;

2. Types of formations;

3. The location of the well;

4. Sources of potential contamination in the area surrounding the well;

5. Intended use of the well; and

6. Planned or approved treatment schemes, if applicable.

(5) Irrigation wells.

(a) Irrigation wells shall be constructed with Double Check Valve Backflow Preventers that meet the specifications of the A.S.S.E. 1015-2011 Performance Requirements for Double Check Backflow Prevention Assemblies to prevent reverse flow of discharged water into the wellhead and aquifer.

(b) Reduced Pressure Backflow Preventers that meet the specifications of A.S.S.E. 1013-2011 Performance Requirements for Reduced Pressure Principle Backflow Preventers shall be installed.
1. Onto irrigation wells that are capable of pumping greater than ten thousand gallons per
day or supplying groundwater to center pivot irrigation systems; and

2. In line between the final discharge point and the well discharge head.

Section 9. Well Finishing, Disinfection, and Testing. (1) Upper terminal. Upon well
completion, the certified driller shall comply with the following:

(a) Upper terminal. The casing shall be terminated:

1. The certified well driller shall terminate the casing] A minimum of four (4) inches
above finished ground surface and shall slope the ground surface away from the well; and

2. In a flood zone. The certified well driller shall terminate the casing] a
minimum of two (2) feet above the highest base flood elevation at the site.

[Well-development.] Newly installed water supply wells shall be developed until the
column of water in the well is free of visible sediment.

(3) Disinfection. Wells shall be disinfected in accordance with the procedures established
in this subsection[paragraph]. following procedures:

(a) Determine the:

1. Feet of water in the well by subtracting the static water level from the total depth of the
well;

2. [(b) Determine the] Amount of chlorine disinfectant to use in order to provide a
minimum chlorine concentration of 100 parts per million (ppm) in the well as established in this
subparagraph.[§]

a. [(+) For a four (4) inch-diameter well, there shall be] the certified well driller shall use
a minimum of three (3) cups of chlorine bleach or two (2) ounces of hypochlorite granules per
1. 150 feet of water in the well.

2. 
   a. For a six (6) inch-diameter well, **there shall be** the certified well driller shall use] a
   minimum of three (3) cups of chlorine bleach or two (2) ounces of hypochlorite granules per
   seventy-five (75) feet of water in the well.

3. 
   b. For an eight (8) inch-diameter well, **there shall be** the certified well driller shall
   use] a minimum of three (3) cups of chlorine bleach or two (2) ounces of hypochlorite granules
   per fifty (50) feet of water in the well.

4. 
   c. For a twenty-four (24) inch-diameter well, **there shall be** the certified well driller
   shall use] a minimum of eight (8) cups of chlorine bleach or five (5) ounces of hypochlorite
   granules per ten (10) feet of water in the well; and

   (b) Chlorine disinfection procedure.

5. 1. Introduce the chlorine or hypochlorite granules into the well;

6. 2. Circulate the chlorine solution throughout the well for a minimum of thirty (30)
   minutes, ensuring that the chlorinated water contacts all parts of the well casing, borehole,
   discharge pipes, and all internal well components;

7. 3. Allow chlorinated water to stand in the well for a minimum of thirty (30) minutes;

8. 4. After the chlorinated water solution has stood in the well for a minimum of thirty (30)
   minutes, purge the well of all chlorinated water; and

9. 5. Chlorinated water shall;

   a. Be discharged to the ground in a manner that prevents environmental harm; and

   b. **shall** Not be discharged to a surface water body.

10. 4. A sanitary seal or watertight well cap shall be installed[Well cap.

11. (a) The certified well driller shall install a well cap or sanitary seal.
(b) The well cap shall be watertight.

(5) Vents. (a) A vent shall consist of a pipe;

1. That extends[extending] above the top of the well and above base[known] flood elevation[elevations—]

2. With the open end turned down;

3. The open end shall be covered with twenty-four (24) mesh or finer screen of durable material.

(b) For wells with naturally occurring methane, a vent shall be installed.

(6) Bacteriological[Feecal—Coliform] sampling.

(a) A well[If the well is] for potable use[, the certified well driller] shall be[have the well] analyzed for E. coli[feecal—coli—form bacteria] within thirty (30) days of the completion of the well.

(b) The sample shall not be collected until all residual chlorine has been purged from the well.

(c) Sample containers shall be sterile glass or plastic.

(d) Samples for E. coli[feecal—coli—form bacteria] shall be;

1. Delivered to the laboratory within six (6) hours of the time they are collected[—]

2. [(d—Samples—shall—he)] Kept at four (4) degrees Centigrade (forty (40) degrees Fahrenheit) until delivered to the laboratory; and[—during that time samples shall not be frozen—]

(e) Sample containers shall be sterile glass or plastic.

3. Analyzed[(f—]Feecal—coli—form analysis shall be conducted] at a laboratory certified in accordance with 401 KAR 8:040.

Section 10. Well Modification. (1) General.[If] A water supply well being[is] modified shall be brought[—the certified driller shall bring the well construction] into compliance with this
(2) Well pits.

(a) A new well pit shall not be constructed, and[aperson shall not modify] an existing well pit shall not be modified.

(b) [If] When a well is being modified, the:

1. [The certified well driller modifying a well shall eliminate an] Existing well pit shall be eliminated; and

2. Casing shall be extended[shall extend the casing] a minimum of four (4) inches above the finished ground surface.

(c) 1. Flooring and the walls of the pit shall be broken and removed[;] and

2. The pit shall be filled with compacted earth.

(3) Finishing and testing. The well[certified well driller] shall be:

1. Finished[Finish the well]; and

2. [Have the well] Tested for E. coli[feecal coliform bacteria] in accordance with Section 9(6) of this administrative regulation.

(4) [Reporting requirement.] Within sixty (60) days of modification of a well, the certified water supply well driller shall submit a Uniform Kentucky Well Maintenance and Plugging Record to the well owner and the cabinet as established in[accordance with] Section 1(4) of this administrative regulation.

Section 1. Well Abandonment. (1) Well unsuitable for its intended use. A water supply well that has been damaged, or is otherwise unsuitable for use as a water supply well, shall be abandoned within thirty (30) days from the date it is determined that the well is no longer suitable for its intended use.
(a) Water supply wells shall be abandoned in such a manner that prevents \( \text{as to prevent} \) the migration of:

1. Surface water or contaminants to the subsurface; and
2. \( \text{to prevent migration of} \) Contaminants among water bearing zones.

(b) A record of the abandonment of a water supply well shall be submitted by the certified water supply well driller on the Uniform Kentucky Well Maintenance and Plugging Record to the cabinet\( [\text{water well drillers program}] \) within sixty \( (60) \) days from the date abandoned.

(2) Well preparation for abandonment.

(a) Measurements. Prior to abandoning a water supply well, the certified water supply well driller shall record the measurements established in subparagraphs 1 through 3 of this paragraph on the Well Maintenance and Plugging Record:

1. \( [\text{Measure the}] \) Well depth;
2. \( [\text{Measure the}] \) Well diameter; and
3. \( [\text{Measure the}] \) Depth to static water level[\( \vdots \) and
4. Record the information in subparagraphs 1 through 3 of this paragraph on the Uniform Kentucky Well Maintenance and Plugging Record].

(b) Obstructions.

1. All obstructions shall be removed from the well prior to abandoning; or
2. If the pump or equipment is stuck in the well and cannot be removed, \( [\text{the certified driller shall push}] \) the material shall be pushed to the bottom of the well[\( \vdots \) as far as possible.

(c)[Disinfection:] The\( [\text{certified well driller shall disinfect the}] \) well shall be disinfected as established in\( [\text{accordance with}] \) Section 9(3) of this administrative regulation.
(3) Drilled wells.
(a) Well casing, screen, and liner removal.

1. [1-a.] All well casing, screens, and liners:
   a. Shall be removed from the well prior to placing the sealing material by pulling or over-drilling; and[.]

   b. [Well casing, screens, and liners] May be removed simultaneously with the introduction of sealing material if necessary to avoid borehole collapse.

2. a. If the well casing has been grouted in place and [the driller is unable to remove] the casing cannot be removed, the casing may be cut off [the certified well driller may cut off the casing] a minimum of five (5) feet below the ground surface.

   b. The [driller shall fill the] well shall be filled with sealing materials or inert earth materials from the bottom of the well to a minimum of twenty (20) feet below the ground surface.

   c. The [certified well driller shall fill the] remainder of the well shall be filled with sealing materials to a minimum of five (5) feet below the ground surface.

   d. The uppermost five (5) feet of the well shall be filled with sealing materials or other inert earth material suitable to land use at the site.

(b) Sealing material placement.

1. [1-a.] The [certified well driller shall fill the] well or borehole shall be filled:

   a. With sealing materials or other inert materials from the bottom to a minimum of twenty (20) feet below the ground surface; and[

   b. [Filling the well or borehole with sealing materials or inert material shall be done in a manner] So that all voids are completely filled and in a manner that prevents bridging across the
well or well bore.

2. The [certified well driller shall fill the] well or borehole shall be filled with sealing materials from a minimum of twenty (20) feet below ground surface to a minimum of five (5) feet below the ground surface[s] in a manner that prevents the migration of pollutants along the well or well bore.

3. [The certified well driller shall use] Sealing materials, clay, or other inert material suitable to the proposed land use shall be used to fill the upper five (5) feet or less of a well being abandoned.

(4) Wells with multiple casing. The [certified well driller shall remove the] innermost well casing, screen, or liner shall be removed first and [fill] the well filled up to the level of the bottom of the next outer casing before removing the next outer casing.

(a) Voids. The [certified well driller shall fill the] well or borehole shall be filled with sealing materials or other inert materials from the bottom of the well to a minimum of five (5) feet below the bottom of a void.

1. A packer, expansion bridge, or other support shall be placed at the top of the void.

2. A permanent bridge consisting of a minimum of ten (10) feet of sealing materials shall be placed above the expansion bridge.

(b) 1. The [certified well driller shall plug the] remainder of the well or borehole shall be plugged with sealing materials or other inert materials from the bottom to a minimum of twenty (20) feet below the ground surface; and [fill] the certified well driller shall

2. [fill] The well or borehole shall be filled with sealing materials from a maximum of twenty (20) feet below the ground surface to a minimum of five (5) feet below the ground surface.
(c) The certified well driller shall use sealing materials, clay, or other inert material suitable to the proposed land use shall be used to fill the upper five (5) feet or less of a well being abandoned.

(5) Bored[and-hand dug] wells.

(a) The certified well driller shall fill the well shall be filled with sealing materials, dense grade aggregate, limestone sand, or native clay from the bottom of the well to a maximum of five (5) feet below finished ground surface.

(b) The certified well driller shall remove the upper five (5)[(five)] feet of well casing, tiles, or other well-wall material shall be removed. A minimum one (1) foot thick concrete surface seal shall be poured and allowed to cure for twenty-four (24) hours[and fill] The uppermost five (5) feet of the borehole shall be filled with clay or an inert[impermeable] material appropriate to the intended use of the land.

(6) Driven wells.

(a) The certified well driller shall remove[.] Well casing and screens shall be removed[.] and sealing materials shall be introduced[simultaneously] from the bottom of the well to a maximum five (5) feet below finished ground surface. A minimum one (1) foot thick concrete surface seal shall be poured and allowed to cure for twenty-four (24) hours.

(b) The certified well driller shall use[.] Sealing materials, clay, or other inert material suitable to the proposed land use shall be used to fill the upper five (5) feet or less of a well being abandoned.
(7) Flowing artesian wells.

(a) [The certified well driller shall plug] Flowing artesian wells or wells in which there is upward movement of water between aquifers shall be plugged with neat cement grout that is pumped under pressure and mixed with the minimum quantity of water that will permit handling.

(b) [The driller may restrict] Artesian flow may be restricted if necessary.

(c) [The certified well driller shall place] A well packer, cast-iron plug, or temporary bridge shall be placed at the bottom of the confining formation immediately overlying the artesian water-bearing horizon to seal off the flow.

(8) Hand dug wells.

(a) The pumps, casing, and equipment shall be removed, and the well surface pad shall be demolished.

(b) The well shall be filled from the bottom to the top with clean rock, gravel, or sand to within five (5) feet of the ground surface.

(c) The poured concrete surface seal shall be:

1. A minimum of one (1) foot thick; and

2. Allowed to cure for twenty-four (24) hours before finishing to the ground surface.

(d) The remaining three (3) feet or less of annular space shall be filled from the top of the surface seal to the ground surface with clean soil or other appropriate surface material.

(9) [Reporting requirement] Within sixty (60) days after a water well has been abandoned, the certified water supply well driller shall complete and submit a Uniform Kentucky Well Maintenance and Plugging Record to the well owner, if known, and to the cabinet.

Section 12. Incorporation by Reference. (1) The following material is incorporated by reference:
(a) "Uniform Kentucky Well Construction Record", DEP No. DOW6010, July 2019 [April 2008];

(b) "Water Well Owner's Guide", Kentucky Energy and Environment Cabinet, DEP No. DOW6020, September 8, 2009 [July 2008];

(c) "Kentucky Water Well Variance Request", DEP No. DOW6030, July 2019 [2008];

(d) "Uniform Kentucky Well Maintenance and Plugging Record", DEP No. DOW6040, Month 2019 [April 2008];

(e) Water Well Bacterial Report and Chain of Custody form, DEP No. DOW6050, July 2019;


(i) National Sanitation Foundation (N.S.F.) Standard 61-2018, "Drinking Water System Components – Health Effects" [61], "Drinking Water System Components Health Effects" [61], February 2018 [May 2008]; and

2011[2004].


(2) This material may be inspected, copied, or obtained, subject to applicable copyright law, at the Division of Water, 300 Sower Boulevard, Frankfort, Kentucky 40601, Monday through Friday, 8 a.m. to 4:30 p.m. The material in subsection (1)(a) through (d) of this section is also available on the Division of Water Web site, https://eec.ky.gov/Environmental-Protection/Water/GW/Pages/default.aspx[www.water.ky.gov].


(b) American Society for Testing and Materials (A.S.T.M.) Specification F480-14, "Standard Specification for Thermoplastic Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), SCH 40 and SCH 80", 2014, may also be obtained from the American Society for Testing Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA, 19428-2949; Phone 1-610-832-9585.

(c) National Sanitation Foundation (N.S.F.) Standard 14-2018, "Plastics Piping System Components and Related Materials", June 2018, may also be obtained from the National Sanitation Foundation International, P.O. Box 130140, 789 N. Dixboro Road, Ann Arbor, MI, 48105; Phone 1-800-673-6275.
(d) National Sanitation Foundation (N.S.F.) Standard 61-2018 "Drinking Water System Components – Health Effects" [61, "Drinking Water System Components Health Effects"], February 2018, may also be obtained from the National Sanitation Foundation International, P.O. Box 130140, 789 N. Dixboro Road, Ann Arbor, MI, 48105; Phone 1-800-673-6275.

(e) American Society of Sanitary Engineering (A.S.S.E.) 1015-2011, "Performance Requirements for Double Check Backflow Prevention Assemblies and Double Check Fire Protection Backflow Prevention Assemblies", August 2011, may also be obtained from the American Society of Sanitary Engineering, 18927 Hickory Creek Drive, Suite 220, Mokena, IL, 60448; Phone (708) 995-3019.

(f) American Society of Sanitary Engineering (A.S.S.E.) 1013-2011, "Performance Requirements for Reduced Pressure Principle Backflow Preventers and Reduced Pressure Principle Fire Protection Backflow Preventers", August 2011, may also be obtained from the American Society of Sanitary Engineering, 18927 Hickory Creek Drive, Suite 220, Mokena, IL, 60448; Phone (708) 995-3019.
401 KAR 6:310 Water supply well construction practices and standards is approved for filing.

Charles G. Snively, Secretary
Energy and Environment Cabinet

Date
10/3/2019
REGULATORY IMPACT ANALYSIS AND TIERING STATEMENT

401 KAR 6:310
Contact Person: Carole J. Cataldo
Phone: (502) 782-6914
Email: water@ky.gov (Subject Line: "Chapter 6 regulations")

(1) Provide a brief summary of:

(a) What this administrative regulation does: This administrative regulation provides performance standards and minimum standards for the construction, modification, and abandonment of water supply wells.

(b) The necessity of this administrative regulation: This administrative regulation is necessary to establish standards of practice for water well construction as required by KRS 223.435.

(c) How this administrative regulation conforms to the content of the authorizing statutes: KRS 224.10-100, 224.70-100, and 224.70110 authorize the cabinet to establish administrative regulations to protect water quality. KRS 223.435 requires the cabinet to promulgate administrative regulations establishing standards of practice for water well construction. This administrative regulation provides minimum standards and requirements for construction, modification, and abandonment of water supply wells.

(d) How this administrative regulation currently assists or will assist in the effective administration of the statutes: This administrative regulation establishes performance standards and minimum standards and requirements for the construction, modification, and abandonment of water supply wells as required by KRS 223.435.

(2) If this is an amendment to an existing administrative regulation, provide a brief summary of:

(a) How the amendment will change this existing administrative regulation: The amendment has been made to meet the drafting requirements of KRS Chapter 13A. The amendment to this administrative regulation will provide clear, updated standards for certified well drillers and well driller assistants in the construction, modification, and abandonment of water supply wells.

(b) The necessity of the amendment to this administrative regulation: The amendment to this administrative regulation is necessary to include well driller assistant roles and responsibilities required by Senate Bill 32 of the 2019 legislative session which amended KRS 223.400 through 223.460, and to update standards and practices for well construction, modification, and abandonment to current standards.
(c) How this administrative regulation conforms to the content of the authorizing statutes: KRS 224.10-100, 224.70-100, and 224.70110 authorize the cabinet to establish administrative regulations to protect water quality. KRS 223.435 requires the cabinet to promulgate administrative regulations establishing standards of practice for water well construction. This administrative regulation provides minimum standards and requirements for construction, modification, and abandonment of water supply wells.

(d) How the amendment will assist in the effective administration of the statutes: The amendment has been made to meet the drafting requirements of KRS Chapter 13A. The amendment to this administrative regulation will provide clear, updated standards for certified well drillers and well driller assistants in the construction, modification, and abandonment of water supply wells.

(3) List the type and number of individuals, businesses, organizations, or state and local governments affected by this administrative regulation: This administrative regulation affects approximately 1000 water well owners per year, approximately 200 certified water well drillers and potentially 400 well driller assistants, and as many as 300 drilling/consulting companies. This administrative regulation also affects the Kentucky Division of Water, Kentucky Water Well Certification Board, and the Kentucky Ground Water Association.

(4) Provide an analysis of how the entities identified in question (3) will be impacted by either the implementation of this administrative regulation, if new, or by the change, if it is an amendment, including:

(a) List the actions that each of the regulated entities identified in question (3) will have to take to comply with this administrative regulation or amendment: The entities identified in question (3) will need to comply with the updated minimum standards for the location, construction, modification, and abandonment of water supply wells.

(b) In complying with this administrative regulation or amendment, how much will it cost each of the entities identified in question (3): The amendment to this administrative regulation is not expected to increase costs.

(c) As a result of compliance, what benefits will accrue to the entities identified in question (3): The entities identified in question (3) will be in compliance with all statutory requirements established in KRS 223.400 through 223.460.

(5) Provide an estimate of how much it will cost the administrative body to implement this administrative regulation:

(a) Initially: The amendment to this administrative regulation will not result in additional costs.

(b) On a continuing basis: The amendment to this administrative regulation will not result in additional costs.
(6) What is the source of the funding to be used for the implementation and enforcement of this administrative regulation: Water well driller and well driller assistant certification fees, Clean Water Act Section 106 for groundwater, and general funds.

(7) Provide an assessment of whether an increase in fees or funding will be necessary to implement this administrative regulation, if new, or by the change if it is an amendment: The amendment to this administrative regulation will not necessitate increased fees or funding.

(8) State whether or not this administrative regulation established any fees or directly or indirectly increased any fees: This administrative regulation does not establish or increase any fees directly or indirectly.

(9) TIERING: Is tiering applied? (Explain why or why not) Tiering is not applied to this administrative regulation because it establishes minimum standards for the construction, modification, and abandonment of water wells.
FISCAL NOTE ON STATE OR LOCAL GOVERNMENT

401 KAR 6:310
Contact Person: Carole J. Catalfo
Phone: (502) 782-6914
Email: water@ky.gov (Subject Line: “Chapter 6 regulations”)

(1) What units, parts, or divisions of state or local government (including cities, counties, fire departments, or school districts) will be impacted by this administrative regulation? The Division of Water and those divisions of state or local government that would require a certified well driller to construct, modify, or abandon a water well, such as a municipally owned public water system.

(2) Identify each state or federal statute or federal regulation that requires or authorizes the action taken by the administrative regulation. KRS 224.10-100, 224.70-100, and 224.70110 authorize the cabinet to establish administrative regulations to protect water quality. KRS 223.435 requires the cabinet to promulgate administrative regulations establishing standards of practice for water well construction. This administrative regulation provides minimum standards and requirements for construction, modification, and abandonment of water supply wells.

(3) Estimate the effect of this administrative regulation on the expenditures and revenues of a state or local government agency (including cities, counties, fire departments, or school districts) for the first full year the administrative regulation is to be in effect.

(a) How much revenue will this administrative regulation generate for the state or local government (including cities, counties, fire departments, or school districts) for the first year? This administrative regulation will not generate additional revenue.

(b) How much revenue will this administrative regulation generate for the state or local government (including cities, counties, fire departments, or school districts) for subsequent years? This administrative regulation will not generate additional revenue.

(c) How much will it cost to administer this program for the first year? This administrative regulation will not result in additional costs.

(d) How much will it cost to administer this program for subsequent years? This administrative regulation will not result in additional costs.

Note: If specific dollar estimates cannot be determined, provide a brief narrative to explain the fiscal impact of the administrative regulation.

Revenues (+/-): NA
Expenditures (+/-): NA
Other Explanation: This administrative regulation will not generate additional revenue or result in additional costs.
FEDERAL MANDATE ANALYSIS COMPARISON

401 KAR 6:310
Contact Person: Carole J. Catalfo
Phone: (502) 782-6914
Email: water@ky.gov (Subject Line: “Chapter 6 regulations”)

1. Federal statute or regulation constituting the federal mandate. There is no federal mandate for the construction, modification, or abandonment of water wells.

2. State compliance standards. KRS 223.435, 224.10-100, 224.70-100, 224.70-110

3. Minimum or uniform standards contained in the federal mandate. There is no federal mandate for the construction, modification, or abandonment of water wells.

4. Will this administrative regulation impose stricter requirements, or additional or different responsibilities or requirements than those required by the federal mandate? There is no federal mandate for the construction, modification, or abandonment of water wells.

5. Justification for the imposition of the stricter standard, or additional or different responsibilities or requirements. There is no federal mandate for the construction, modification, or abandonment of water wells.
Detailed Summary of Material Incorporated by Reference

I. This administrative regulation incorporates by reference the “Uniform Kentucky Well Construction Record”, DEP No. DOW6010, July 2019. This document is used to record well specifications when a water well has been completed, modified, or abandoned, and is submitted to both the cabinet and the well owner.

This document consists of two (2) pages.

Detailed summary of changes:
Reformatted and renumbered accordingly, DEP Form No. added, and date revised.
Under “Well ID#” added check boxes for upgradient/Background/Reference, Downgradient, and Sidegradient.
Under “Attachments” added check boxes for “Other laboratory analysis report” and “Aquifer test results”.  
Changed “Facility type & ID number” to “Program type and Permit or ID Number”.
Reversed fields for Physiographic region and Surface Elevation.
Added check box for “Well in flood zone”.
Added check boxes for “Well specifications”, “Surface completion”, “Well development method”, Monitoring Wells Only”, and “Casing 2 foot above flood level”.
Under “Water Wells Only”, added check boxes under “Pump installed” for Bladder and Hand; Disinfectant, and changed “Coliform test” to “Bacteria test” with fields for E. coli and Total Coliform.

II. This administrative regulation incorporates by reference the “Uniform Kentucky Well Maintenance and Plugging Record”, DEP No. DOW6040, July 2019. This document is used to record well specifications when a water well has undergone maintenance or repairs, or abandoned, and is submitted to both the cabinet and the well owner.

This document consists of two (2) pages.

Detailed summary of changes:
Reformatted and renumbered accordingly, DEP Form No. added, and date revised.
Under “Owner Well ID#” added check boxes for Upgradient/Background/Reference, Downgradient, and Sidegradient.
Under “Attachments” changed “topographic map” to “aerial photo or map”, and removed “well diagram” and “coliform analysis”.
Changed “facility type” to “program type” and added check boxes for KPDES, Mining, PWS, and Water Withdrawal”.
Under “Surface elevation method” and “Latitude/Longitude method”, added a check box for “GIS”.
Under “Well status”, removed check boxes for “Inactive” and “Unsuitable for intended use”, and added a check box for “Excavated”.
Under “Drilling method” added check boxes for “Air hammer”, “Dual circulation”, and “Combo – other”.

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Under “Replacement” removed check box for “Other” and added check boxes for “Backfill” and “pitless adapter”.
Added a field for “Modification” with associated check boxes.
Under “Maintenance/cleaning” changed “How cleaned?” to “Cleaning type”.
Under “Well specifications” added a field for “SWL (ft)”.
Under “Plugging activity” removed check box for “Well overdrilled, casing-screen-grout-filter pack removed, borehole filled with gravel/sand bottom to SWL and grouted SWL to top”.
Under “Sealing material” added a corresponding chart for materials, and a field for “Water Wells Only”.
Added a field for “Lithologic log”.
Added a page for completing fields for “Owner Well ID number”, “Program type and Permit or ID Number”, “Well use”, and “Lithologic log”.

III. This administrative regulation incorporates by reference the “Water Well Owner’s Guide”, Energy and Environment Cabinet, DEP No. DOW6020, September 2009. This document is provided to well owners by the certified well driller within sixty (60) days of a well being completed or modified.

This document consists of twenty-one (21) pages.

IV. This administrative regulation incorporates by reference the Kentucky Water Well Variance Request Form”, DEP No. DOW6030, July 2019. This document is used to request a variance from practices and standards established in administrative regulations for well construction, modification, or abandonment.

This document consists of one (1) page.

Detailed summary of changes:
Reformatted and renumbered accordingly, added DEP Form No, and revised address and date.
Under “Well Location”, added fields for “Quadrangle”, “County”, “AI Number”, “AKGWA”, “Latitude”, and “Longitude”.
Under “Well Owner Identification” added a field for “Email”.
Under “Effective Dates” removed “month day year”
Under “Reason For Variance”, added “Attach all supporting documentation. 401 KAR 6:310”.
under a check box for “The well was constructed by a drilling method that does not require an annular space.”
Under “Well Characteristics” added cell for “soil thickness: ft.”
Under “Sampling Requirements”, added a field for “E. coli”.

V. This administrative regulation incorporates by reference the “Water Well Bacterial Report and Chain of Custody” form, DEP No. DOW6050, July 2019. This document is used to submit bacteriological results from a certified laboratory to both the cabinet and well owner.

This document consists of one (1) page.

This document consists of four (4) pages.


This document consists of twenty-six (26) pages.

VIII. This administrative regulation incorporates by reference the “National Sanitation Foundation (N.S.F.) Standard 14-2018, "Plastics Piping System Components and Related Materials", June 2018. This document is used to select PVC casings, liners, and screens.

This document consists of sixty-eight (68) pages.

IX. This administrative regulation incorporates by reference the “National Sanitation Foundation (N.S.F.) Standard 61-18, “Drinking Water System Components – Health Effects”, February 2018. This document is used to select PVC casings and liners.

This document consists of 152 pages.

X. This administrative regulation incorporates by reference the American Society of Sanitary Engineering (A.S.S.E.) Standard 1015-2011, "Performance Requirements for Double Check Backflow Prevention Assemblies and Double Check Fire Protection Backflow Prevention Assemblies, 2011. This document is used to select double check backflow preventers.

This document consists of thirty-six (36) pages.

XI. This administrative regulation incorporates by reference the American Society of Sanitary Engineering (A.S.S.E.) Standard 1013-2011, "Performance Requirements for Reduced Pressure Principle Backflow Preventers and Reduced Pressure Principle Fire Protection Backflow Preventers", 2011. This document is used to select reduced pressure backflow preventers.

This document consists of forty (40) pages.