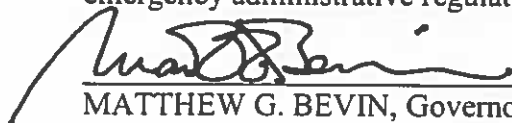


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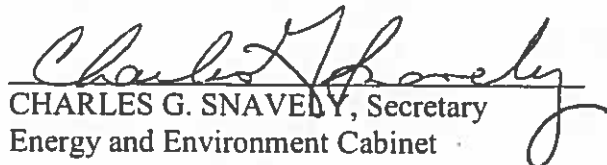
STATEMENT OF EMERGENCY

401 KAR 6:350E

This emergency administrative regulation is being promulgated to implement the certification of water well driller assistants as required by Senate Bill 32 of 2019. This emergency regulation is necessary to protect human health and the environment while making the certification program immediately available. This emergency regulation shall be replaced by an ordinary administrative regulation. The ordinary administrative regulation is identical to this emergency administrative regulation.


MATTHEW G. BEVIN, Governor

7/9/2019
Date


CHARLES G. SNAVELY, Secretary
Energy and Environment Cabinet

7/9/2019
Date

1 ENERGY AND ENVIRONMENT CABINET

2 Department for Environmental Protection

3 Division of Water

4 (Emergency Amendment)

5 401 KAR 6:350E. Monitoring well construction practices and standards.

6 RELATES TO: KRS 223.400 through 223.460~~[223.400–223.460]~~, 223.991, 224.1-400,
7 224.1-405, 224.43-010 through 224.43-815, 224.46-012 through 224.46-870, 224.60-100
8 through 224.60-160~~[224.01-400, 224.01-405, 224.43-010–224.43-815, 224.46-012–224.46-870,
9 ~~224.60-100–224.60-160, EO 2008-507, 2008-531]~~~~

10 STATUTORY AUTHORITY: KRS 151.110, 223.435, 224.10-100, 224.70-100, 224.70-
11 110

12 NECESSITY, FUNCTION, AND CONFORMITY: KRS 224.10-100, 224.70-100, and
13 224.70-110 authorize the cabinet to establish administrative regulations to protect water quality.
14 KRS 223.435 requires the Secretary of the Cabinet to promulgate administrative regulations
15 establishing standards of practice for water well construction.~~[EO 2008-507 and 2008-531,~~
16 ~~effective June 16, 2008, abolish the Environmental and Public Protection Cabinet and establish~~
17 ~~the new Energy and Environment Cabinet.]~~ This administrative regulation establishes
18 requirements for the construction of monitoring wells, including temporary monitoring wells,
19 and provides minimum standards for location, construction, modification, and abandonment.

20 Section 1. General Requirements. (1)~~[Certified monitoring well driller requirement.]~~

1 Each monitoring well shall be constructed, modified, or abandoned by a monitoring well driller
2 or monitoring well driller assistant~~[natural persons]~~ certified in accordance with KRS 223.425
3 and 401 KAR 6:320.

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

6 (3) Well specifications shall:

7 (a) Be provided by the certified well driller to the well driller's assistant, as required
8 under direct supervision defined by 401 KAR 6:001(14), for the work to be conducted including:

9 1. Construction;

10 2. Alteration;

11 3. Maintenance;

12 4. Repair;

13 5. Reworking;

14 6. Development;

15 7. Abandonment; or

16 8. Plugging; and

17 (b) Shall be recorded on the Uniform Kentucky Well Construction Record which shall

18 be:

19 1. Retained by the well driller's assistant; and

20 2. Available for inspection upon request by the cabinet.

21 (c) Changes made to well specifications during any work being conducted on a well shall

22 be:

23 1. Approved in advance by a certified well driller;

1 2. Recorded on an amended Uniform Kentucky Well Construction Record:

2 3. Retained by the well driller's assistant; and

3 4. Available for inspection upon request by the cabinet.

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

8 ~~(5)[(3)]~~ Reporting requirement. Within sixty (60) days after completion, modification, or
9 abandonment of a monitoring well or temporary monitoring well, the certified monitoring well
10 driller shall: ~~submit a report of well construction to the cabinet.~~

11 (a) Record all information about the depth and the materials used in the monitoring well
12 construction, modification, or abandonment; and ~~shall also be recorded.~~

13 (b) Submit a complete ~~The report shall be submitted on the form~~ Uniform Kentucky
14 Well Construction Record form to the cabinet and monitoring well owner.

15 ~~(6)[(4)]~~ ~~Records to monitoring well owner. The certified monitoring well driller shall~~
16 ~~provide a copy of the Uniform Kentucky Well Construction Record to the monitoring well owner~~
17 ~~within sixty (60) days after a monitoring well has been constructed, modified, or abandoned.]~~

18 ~~(7)[(5)]~~ ~~The certified well driller shall tag~~ Each well constructed or modified shall be
19 tagged with a well identification number tag provided by the cabinet.

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

22 (b) If a well identification number does not exist at the time of modification or
23 abandonment, the well shall be tagged ~~certified driller shall tag the well, as appropriate,~~

1 and~~include~~ the well identification number assigned shall be recorded on~~in~~ the Uniform
2 Kentucky Well Maintenance and Plugging Record.

3 ~~(8)~~~~(6)~~ Variance. If conditions exist or are believed to exist that preclude compliance
4 with the requirements established in~~of~~ this administrative regulation, the certified monitoring
5 well driller may request a variance from the cabinet~~[water well-drillers program]~~ prior to well
6 construction or well abandonment.

7 (a) The variance request shall be submitted in writing on the Kentucky Monitoring Well
8 Variance Request form and shall include~~:~~

9 ~~(a) The variance shall include the following~~:

10 1. A thorough description of the:

11 a. Land use at the site and at adjacent and surrounding properties; and

12 b. Expected geologic conditions at the site, including:

13 i. Soil thickness;

14 ii. Type of bedrock;

15 iii. Depth to groundwater;

16 iv. Perched water; and

17 v. Confining zones;

18 2. Distance between the proposed monitoring well~~[monitoring well]~~ location and:

19 a. Other existing water-supply wells or monitoring wells on adjacent properties; and

20 b.~~[3. Distance between the proposed monitoring well location and]~~ Potential pollution

21 sources, both on site and on adjacent properties, including:

22 (i) Septic systems;~~;~~

23 (ii) Sewers; and~~;~~

1 (iii) Petroleum and chemical storage tanks, or other potential pollution sources;

2 ~~3.[4. A description of the geologic conditions expected at the site, including soil~~

3 ~~thickness, type of bedrock, if present, perched water, confining zones, and depth to~~

4 ~~groundwater;]~~

5 ~~5.] A summary of the provisions, including the section numbers of this administrative~~

6 ~~regulation, for which the variance is requested;~~

7 ~~4.[6:] A justification for the variance;[and]~~

8 ~~5.[7:] Proposed construction, modification, or abandonment procedures to be used in lieu~~

9 ~~of compliance with this administrative regulation; and~~

10 ~~6. An explanation of[as to] how the alternate well construction procedures will ensure the~~

11 ~~protection of the quality of the groundwater and the protection of public health and safety.~~

12 (b) Written variance procedure.

13 1. The certified monitoring well driller shall:

14 a. Request a variance by submitting to the cabinet a complete Kentucky Monitoring Well

15 Variance Request form signed by the certified monitoring well driller and, if possible, by the

16 monitoring well owner; and

17 b. Obtain cabinet approval before well construction begins.

18 ~~[1. The driller shall submit the Kentucky Water Well Variance Request form, signed by~~

19 ~~the certified driller and well owner, and obtain written cabinet approval before well construction~~

20 ~~begins.]~~

21 2. The cabinet shall:

22 a. Notify the applicant in writing within ten (10) days of its decision to either grant or

23 deny the variance; and[:]

1 ~~b.[3. The cabinet shall]~~ Not issue a variance if the proposed monitoring~~[water supply]~~
2 well construction will not ensure the protection of groundwater quality and public health and
3 safety.

4 (c) Verbal variance for an emergency.

5 1. A certified monitoring well driller may request a verbal variance for an emergency if
6 the delay incurred due to the written variance procedure established in paragraph (b) of this
7 subsection may result in:

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

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

11 ~~b.[e.]~~ A risk to public health or safety.

12 2. The cabinet shall not issue a variance if the proposed monitoring~~[water supply]~~ well
13 construction will not ensure the protection of groundwater quality and public health and safety.

14 3. Within fifteen (15) days of the date the cabinet approves the verbal variance for an
15 emergency, the certified monitoring~~[water]~~ well driller shall submit to the cabinet a complete
16 Kentucky Monitoring~~[Water]~~ Well Variance~~[variance]~~ Request form~~[,]~~ signed by the certified
17 monitoring well driller and monitoring well owner~~[, to the cabinet]~~.

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

19 1.~~[The]~~ Approved alternate well construction procedures;

20 2.~~[The]~~ Well sampling requirements; and

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

23 (e) The certified monitoring well driller shall submit to the cabinet and the monitoring

1 well owner a copy of the Kentucky Monitoring Well Variance Request form[;] signed by the
2 certified monitoring well driller and the monitoring well owner[~~to the cabinet and the monitor-~~
3 ~~ing well owner~~] within sixty (60) days after the well is completed.

4 Section 2. Design Factors. Monitoring well construction shall comply with the
5 requirements established in this section.[~~The certified monitoring well driller shall construct each~~
6 ~~monitoring well to comply with the following:~~]

7 (1) Monitoring wells shall not be constructed in an identified special flood hazard area
8 unless:[~~constructed in flood zones;~~]

9 (a) An alternate site[~~If a reasonable location~~] does not exist[;]

10 (b)[~~monitoring wells may be constructed in flood zones providing~~] The well is water
11 tight; and

12 1. The well is of flush mounted construction; or[~~and~~]

13 2. The well casing extends a minimum of two (2) feet above the highest base[~~maximum~~
14 ~~known~~] flood elevation at the site.

15 (2)[~~(b)~~] Measures shall be taken during drilling and well construction to prevent the
16 introduction or migration of contaminants to a water-bearing zone or aquifer.[;]

17 (3)[~~(2)~~] Water used in the drilling or decontamination process shall be potable.[; ~~and~~]

18 (4)(a)[~~(3)~~] Each water-bearing zone that is intercepted during the drilling phase but not
19 intended for groundwater monitoring shall be:

20 1. Sealed off to prevent down-hole cross contamination before advancing the borehole[;];

21 and

22 2.[~~(a) Each water bearing zone that is intercepted during the drilling phase but not~~
23 ~~intended for groundwater monitoring shall be~~] Prevented from contributing to a well by

1 installing outer casing with a watertight seal.

2 (b) The permanent outer casing shall have a minimum two (2) inch annulus between the:

3 1. Borehole and the outside diameter of the outer casing; and

4 2. ~~a minimum two (2) inch annulus between the~~ Outer casing and the inner casing.

5 (c) The outer casing shall be grouted with sealing materials using a grout pipe.

6 (d) A minimum cure time in accordance with~~following~~ the sealing material
7 manufacturer's specifications~~recommendation~~ shall be required before drilling through the
8 grout seal.

9 (e) Temporary outer casing may be installed.

10 Section 3. Monitoring Well Construction. (1) General Requirements.

11 (a) All permanent and temporary monitoring wells shall be constructed, modified, and
12 abandoned in a manner that prevents~~as to prevent~~ the introduction or migration of
13 contamination to a water-bearing zone or aquifer through the casing, drill hole, or annular
14 materials.

15 (b) Monitoring wells shall be constructed in a manner that yields~~as to yield~~ both
16 groundwater samples and groundwater-level measurements that shall be representative of the
17 water-bearing zone or aquifer to be monitored.

18 (2) Boreholes.

19 (a)1. Boreholes drilled in unconsolidated formations shall be a minimum of four (4)
20 inches greater than the outside diameter of the well casing and well screen except for sonic wells,
21 direct push wells, and temporary wells.

22 2. ~~The driller shall clean out the~~ open borehole shall be cleaned if soil or rock fall into
23 the open borehole during auger or drill-stem retrieval.

1 (b) Boreholes drilled in consolidated formations shall be a minimum of two (2) inches
2 greater than the outside diameter of the well casing and screen.

3 (c) Boreholes drilled by the hollow-stem auger or sonic drill method shall have a
4 minimum auger or casing inner diameter (ID) as established in this subsection.~~[for the~~
5 ~~following:]~~

6 1. Four and one quarter (4 1/4) inches ID for the installation of two (2) inch monitoring
7 well casing;

8 2. Six and one quarter (6 1/4) inches ID for the installation of four (4) inch monitoring
9 well casing; or

10 3. Larger augers shall be required if installation difficulties due to geologic conditions or
11 greater depths are anticipated.

12 (3)(a) Lubricant shall not be used on drill pipe threads, hollow-stem or solid-stem augers,
13 or on the exterior of the drill pipe, unless approved in advance by the cabinet following the vari-
14 ance procedure established in Section 1(8)~~[1(6)]~~ of this administrative regulation.

15 (b) A request to use a lubricant shall:

16 1. Be submitted by the certified monitoring well driller in writing to the cabinet~~;~~~~[water~~
17 ~~well-drillers program,]~~ and

18 2. Include a~~[Material]~~ Safety Data Sheet ~~[(MSDS)]~~ for the proposed lubricant~~[shall be~~
19 ~~submitted with the request]~~.

20 (4)(a) If the air rotary drilling method is used drill cuttings shall be contained.

21 (b) Air rotary drills using screw compressor systems shall have a coalescing filter system
22 that captures excess entrained compressor oils.

23 (5) Drilling Derived Waste (DDW) shall be properly containerized.

1 Section 4. Monitoring Wells Completed Below Ground Surface. (1)(a) Flush mount
2 wells may be approved in~~[used for parking lot]~~ areas where above-ground completion is not
3 practical or poses a threat to monitoring well integrity and safety~~[with high traffic, and limited~~
4 ~~space, such as Underground Storage Tank (UST) facilities, if installed in a manner that prevents~~
5 ~~surface water or contaminants from migrating into the well]~~.

6 (b) Monitoring wells completed below ground surface shall have a flush-mount manhole
7 with a bolt-down well cover and waterproof seals installed to prevent the inflow of surface water
8 and contaminants.

9 (2) The concrete surface pad shall slope away from the monitoring well to prevent
10 precipitation or contaminants from accumulating around the well.

11 (3) (a) Waterproof seals shall be installed between the cover and the box₁⁷ and

12 (b) O-rings or gaskets shall be installed around the bolts that mount on the cover.

13 (4) The cover shall consist of material able to withstand the maximum expected loadings.

14 (5) A water-tight lockable cap shall be attached to the top of the well casing.

15 (6) The well casing shall be cut so that the locking cap shall install properly and provide a
16 waterproof seal.

17 (7) A flush-mount monitoring well shall have a concrete surface pad that shall be a
18 minimum of four (4) inches thick with a minimum two (2) foot diameter or square pad centered
19 on the well.

20 Section 5. Direct Push Monitoring Wells. (1) Direct push monitoring wells installed using
21 direct push technology shall be constructed, modified, and abandoned in~~[such]~~ a manner that
22 prevents~~[as to prevent]~~ the introduction or migration of contamination to a water-bearing zone or
23 aquifer through the casing, drill hole, or annular materials.

1 (2) Temporary monitoring wells installed by the direct push method shall:

2 (a) Be constructed in~~[such]~~ a manner that yields~~[as to yield]~~ both groundwater samples
3 and groundwater level measurements that shall be representative of the water-bearing zone or
4 aquifer to be monitored;~~;~~

5 (b) Not allow the mixing of hydrogeologically distinct groundwater zones;

6 (c) Not exceed fifty (50) feet in depth unless otherwise approved by the cabinet; and

7 (d) Comply with requirements as established in Section 6 of this administrative
8 regulation.

9 (3) Direct push monitoring wells shall also comply with the ~~[following]~~ additional
10 standards established in this subsection.~~;~~

11 (a) The outside diameter of the borehole shall be a minimum of one (1) inch greater than
12 the outside diameter of the well casing;

13 (b) Premixed bentonite slurry or bentonite chips with a minimum of one-eighth (1/8) inch
14 diameter shall be used in the sealed interval below the static water level; and

15 (c)1. Direct push monitoring wells shall not be constructed through more than one (1)
16 water-bearing formation unless the upper water bearing zone is isolated by temporary or
17 permanent casing.

18 2. The direct push tool string may serve as temporary casing.

19 (4) Prepacked well screens may be used.

20 Section 6. Temporary Monitoring Wells. (1) Temporary monitoring wells shall be:

21 (a) Constructed, modified, and abandoned in~~[such]~~ a manner that prevents~~[as to prevent]~~
22 the introduction or migration of contamination to a water-bearing zone or aquifer through the
23 casing, drill hole, or annular materials; and~~.]~~

1 ~~(b)[(a) Temporary monitoring wells shall be]~~ Constructed in[such] a manner that
2 yields[as to yield] both groundwater samples and groundwater level measurements that shall be
3 representative of the water-bearing zone or aquifer to be monitored.

4 ~~(2)[(b)]~~ The annulus between the borehole and the well casing shall be sealed at the
5 surface with a bentonite seal to prevent surface water from migrating into the borehole.

6 ~~(3)[(2)]~~ Each temporary monitoring well shall be properly abandoned within seventy-two
7 (72) hours after the well was constructed.

8 ~~(4)[(3)(a)]~~ A record of a temporary monitoring well constructed and abandoned shall be
9 submitted by the certified monitoring well driller on the Uniform Kentucky Well Maintenance
10 and Plugging Record to the cabinet and the monitoring well owner within sixty (60) days from
11 the date abandoned.

12 ~~[(b) A copy of the Uniform Kentucky Well Construction Record and the Uniform~~
13 ~~Kentucky Well Maintenance and Plugging Record shall also be submitted to the Division of~~
14 ~~Waste Management program regulating the facility, if applicable.]~~

15 Section 7. Materials for Monitoring Wells and Temporary Monitoring Wells.

16 (1) Well casing and screens.

17 (a) Monitoring well casing and screens~~[well screen materials]~~ shall:

18 1. Be constructed of materials determined on a site-specific basis to ensure that the
19 integrity of the material shall not be affected by contaminants or introduce contaminants to the
20 groundwater;[:]

21 ~~2.[(b) Well casing and screens shall]~~ Be resistant to chemical and microbiological
22 corrosion and degradation;[:]

23 ~~3.[(c) Monitoring well casings and screens shall]~~ Be able to withstand the physical forces

1 acting upon them during and following their installation, and during their use, including force[-

2 ~~This includes force]~~

3 a. Due to suspension in the borehole, grouting, development, purging, pumping,
4 sampling;[-] and

5 b.[~~forces]~~ Exerted on the well casing and screens by the surrounding geologic materials;
6 and[-]

7 4. Have a minimum inside diameter of two (2) inches except for direct push and
8 temporary wells.

9 ~~(b)(d) The certified driller shall not install]~~ Used, damaged, or contaminated well casing
10 or screens shall not be installed.

11 ~~[(e) Well casing and screens shall have a minimum inside diameter of two (2) inches~~
12 ~~except for direct push and temporary wells.]~~

13 (2) Joints and couplings.

14 (a)1. All joints and couplings shall be flush type.

15 2. All joints shall be watertight.

16 (b) The monitoring well casing shall extend a minimum of two and one half (2 1/2)
17 feet above ground surface, except as established~~provided for~~ in Section 4 of this administrative
18 regulation.

19 (c)1. A minimum annular space of two (2) inches shall be maintained between the
20 borehole wall and the outside diameter of the monitoring well casing.

21 2. In a multi-cased monitoring well the annulus between the well casings shall be a
22 minimum of two (2) inches.

23 (d) Centralizers shall be installed:

- 1 1.~~[Used]~~ In monitoring wells greater than fifty (50) feet in depth; and[-]
- 2 2.~~[Centralizers shall be installed]~~ At a minimum of ten (10) foot intervals.
- 3 (3) Filter pack.
- 4 (a)~~[(a)1-]~~ The filter pack materials shall:
- 5 1. Consist of clean, rounded to well-rounded, insoluble particles of quartz silica
- 6 composition; and[-]
- 7 2.~~[The filter pack materials shall]~~ Be of a size that minimizes head losses through the
- 8 filter pack and prevents sediment movement through the well screen into the well.
- 9 (b) The filter pack shall be placed:
- 10 1. In the annulus in~~[such]~~ a manner that prevents~~[as to prevent]~~ bridging; and[.]
- 11 2.~~[At a minimum, the filter pack shall be placed]~~ Slowly and carefully by the free-fall
- 12 method; or
- 13 3. Using another method that ensures proper placement of the filter pack.
- 14 (c) The depth to the filter pack shall be continually monitored during installation.
- 15 (d)1. A minimum of six (6) inches of filter pack shall be placed below the bottom of the
- 16 well screen.
- 17 2. The filter pack shall extend at least two (2) feet above the top of the well screen.
- 18 (e) Prepacked well screens may be used if the filter-pack material, filter-pack grain size,
- 19 and the screen slots are properly sized for the monitoring zones.
- 20 (4) Sealing Materials.
- 21 (a) Only potable water shall be used in mixing sealing materials used in the construction
- 22 or abandonment of monitoring wells.
- 23 (b) The sealing material shall be placed in the annulus by a grout pipe, starting at the top

1 of the bentonite seal to within three (3) feet of the ground surface.

2 (c) Side-discharge grout pipes shall be used if sealing the annulus for wells that are 100
3 feet deep or greater.

4 (d) The concrete surface pad or surface casing shall not be installed until the sealing
5 materials placed in the annulus have settled and cured.

6 (e) Bentonite seal.

7 1. The bentonite seal shall:

8 a. Consist of high solids sodium bentonite pellets with a minimum of thirty (30) percent
9 solids; and

10 b. ~~shall~~ Be placed in the annulus by a method that ensures the prevention of bridging.

11 2.a. The depth to the bentonite seal shall be continually monitored during installation.

12 b. The bentonite seal shall extend a minimum of two (2) feet above the top of the filter
13 pack.

14 3.a. Hydration time of the bentonite seal shall be according to the manufacturer's
15 specifications~~[recommendation]~~.

16 b. Only potable water shall be used~~[, if necessary,]~~ as the hydration medium.

17 c. The surface opening and the annulus shall be protected during the hydration period to
18 prevent material from falling into the borehole.

19 (f) Annular seal.

20 1. The annular seal shall be installed in~~[such]~~ a manner that prevents~~[as to prevent]~~ the
21 migration of contaminants or pollutants along the monitoring well annulus into the well.

22 2. The sealing material shall be placed so that pollutants cannot migrate through the
23 annulus.

1 3. The sealing materials shall not have a harmful effect on the well casings or screens or
2 damage the surface completion of the well.

3 Section 8. Surface Completion. (1) Surface casing.

4 (a) Monitoring wells completed with the well casing extending above ground surface
5 shall be constructed with a steel, anodized aluminum, or PVC outer protective surface casing
6 with a locking cap.

7 (b) A water tight well cap shall be installed on the well casing.

8 (c) The well casing shall be cut in a manner so that the locking cap shall install properly
9 and provide a waterproof seal.

10 ~~(d)[1-a.]~~ The outer[Outer] protective surface ~~casing[easings]~~ shall:

11 1. Have a minimum of two (2) inches of clearance between the inside diameter of the
12 outer protective casing and the outside diameter of the well casing;[-]

13 ~~2.[b. The outer protective surface casing shall]~~ Extend a minimum of one (1) inch and a
14 maximum of twelve (12) inches above the inner well casing;[-]

15 3. a.~~[c. The outer protective surface casing shall]~~ Be installed by pouring a concrete
16 slurry mix into the borehole from the top of the annular seal to the ground surface; and[-]

17 ~~b.[2. The outer protective surface casing shall]~~ Then be pushed into the wet concrete
18 slurry a minimum of two (2) feet below the ground surface;[-]

19 4. a.~~[3. The outer protective surface casing shall]~~ Have a minimum of two (2) weep holes
20 for drainage;[-]

21 b. The weep holes shall be a minimum diameter of one-quarter (1/4) inch and shall be
22 located directly above the top of the concrete surface pad; and[-]

23 ~~5.[4. The outer protective surface casing shall]~~ Bear the Kentucky Water Well Tag with

1 the water well number.

2 (2) Bumper guards.

3 (a) Monitoring wells extending above ground surface shall have:

4 1. Four (4) protective bumper guards consisting of steel pipes a minimum of three (3)
5 inches in diameter; and

6 2. A minimum of five (5) feet in length.

7 (b)~~[(a)1.]~~ The bumper guards shall:

8 1. Be installed to a minimum depth of two (2) feet below ground surface in a concrete
9 footing;~~[and]~~

10 2.~~[shall]~~ Extend a minimum of three (3) feet above ground surface;~~[-]~~

11 3. Be filled with concrete for additional strength if the bumper guards are steel pipe; and

12 4.~~[2. Concrete shall be placed into the steel pipe bumper guards for additional strength.~~

13 ~~(b) The bumper guards shall]~~ Be painted a highly visible color.

14 (c) A modification to the bumper guard requirement shall be pre-approved by the
15 cabinet~~[water well drillers program]~~ according to the variance procedure established in Section
16 1(8)~~[1(6)]~~ of this administrative regulation. .

17 (3) Concrete surface pad.

18 (a) All monitoring wells shall have a concrete surface pad a minimum of six (6) inches
19 thick with a minimum three (3) foot diameter or square pad centered on the well.

20 (b) The concrete surface pad shall slope away from the monitoring well in a manner as to
21 prevent precipitation or contaminants from accumulating around the well.

22 Section 9. Well Development. (1) Newly installed monitoring wells shall be developed
23 until the column of water in the well is free of visible sediment.

1 (2) ~~The~~[This] well-development protocol established in paragraph 1 of this Section shall
2 not be used as a method for purging prior to water quality sampling.

3 Section 10. Repairs or modifications to the well casing shall be~~performed by a certified~~
4 ~~monitoring well driller and shall be~~ reported to the cabinet by the certified monitoring well
5 driller~~[water well drillers program]~~ on the Uniform Kentucky Well Maintenance and Plugging
6 Record.

7 Section 11. Monitoring Well Abandonment. (1) General requirements.

8 (a) A monitoring well that has been damaged or is otherwise unsuitable for use as a
9 monitoring well, shall be abandoned;

10 1. Within thirty (30) days from the last sampling date; or

11 2. Thirty (30) days from the date it is determined that the well is no~~[not]~~ longer suitable
12 for its intended use.

13 (b)~~(a)~~ Monitoring wells shall be abandoned in~~[such]~~ a manner that prevents~~[as to~~
14 ~~prevent]~~ the migration of;

15 1. Surface water or contaminants to the subsurface; and

16 2.~~[to prevent migration of]~~ Contaminants among water bearing zones.

17 (c)~~(b)~~ A Division of Waste Management program that permits or regulates the facility at
18 which a monitoring well is to be abandoned shall be notified by the certified monitoring well
19 driller a minimum of ten (10) working days prior to abandonment of each monitoring well.

20 (d) A~~(e) Each~~ temporary monitoring well shall be abandoned within seventy-two (72)
21 hours after installation.

22 (e)~~(d) A~~ record of the monitoring well abandonment shall be submitted to the cabinet
23 by the certified monitoring well driller on the Uniform Kentucky Well Maintenance and

1 Plugging Record~~[to the water well drillers program]~~ within sixty (60) days from the date
2 abandoned.

3 ~~[2. A copy of the Uniform Kentucky Well Maintenance and Plugging Record shall be~~
4 ~~submitted to the cabinet program regulating the facility, if applicable.]~~

5 (2) Abandonment methods and sealing materials for all types of monitoring wells.

6 (a) The surface casing, monitoring well casing, well screen, filter pack, bentonite seal,
7 and cement shall be removed.

8 (b) The borehole shall be plugged with sealing material by grout-pipe method or by
9 pressure injection from the bottom of the boring to within three (3) feet of the top of the
10 borehole, except as established~~[provided]~~ in paragraph (c) of this subsection.

11 (c) The borehole may be plugged using the gravitational displacement, or free-flow
12 method to a maximum depth of fifty (50) feet with bentonite:~~[-If this method is employed, the~~
13 ~~well driller shall use bentonite]~~

14 1. With a minimum particle size of three-eighths (3/8) inch, and

15 2.~~[the bentonite shall be]~~ Used according to the manufacturer's
16 specifications~~[recommendation]~~.

17 (d) The top two (2) feet of the borehole shall be filled with materials consistent with the
18 surrounding ground surface.

19 (e) If the well casing cannot be removed, an alternate method of abandonment may be
20 used~~[employed,]~~ if approved in advance by the cabinet in accordance with the variance process
21 established in Section 1(8)~~[4(6)]~~ of this administrative regulation.

22 Section 12. Division of Waste Management Program Requirements. (1) Prior to the
23 installation or abandonment of a monitoring well at a facility regulated by the cabinet~~[Division~~

1 of ~~Waste Management~~], all monitoring well~~[monitoring well]~~ construction designs and all
2 monitoring-well materials shall be pre-approved by the cabinet~~[Division of Waste Management]~~
3 in accordance with the requirements established in KRS 224.1-400, 224.1-405~~[224.01-400,~~
4 ~~224.01-405,]~~ 224.43-010 through 224.43-815, 224.46-012 through 224.46870, and 224.60-100
5 through 224.60-160.

6 (2) The cabinet~~[Division of Waste Management regulating program]~~ shall be notified at
7 least ten (10) working days prior to a monitoring well~~[monitoring well]~~ construction,
8 modification, or abandonment so that a cabinet representative may be present at the construction,
9 modification, or abandonment.

10 ~~[(3) A copy of the Uniform Kentucky Well Construction Record and the Uniform~~
11 ~~Kentucky Well Maintenance and Plugging Record shall be submitted to the Division of Waste~~
12 ~~Management program regulating the facility, if applicable.]~~

13 Section 13. Documents Incorporated by Reference. (1) The following material is incorpo-
14 rated by reference:

15 (a) "Uniform Kentucky Well Construction Record", DEP No. DOW6010, July
16 2019~~[April 2008]~~;

17 (b) "Uniform Kentucky Well Maintenance and Plugging Record", DEP No. DOW6040,
18 July 2019~~[April 2008]~~; and

19 (c) "Kentucky Monitoring Well Variance Request", DEP No. DOW6090, July
20 2019~~[2008]~~.

21 (2) This material may be inspected, copied, or obtained, subject to applicable copyright
22 law, at the Division of Water, 300 Sower Boulevard, Frankfort, Kentucky 40601, Monday
23 through Friday, 8 a.m. to 4:30 p.m. This material is also available on the Division of Water Web

- 1 site, <https://eec.ky.gov/Environmental-Protection/Water/GW/Pages/GWDrillers.aspx>;
- 2 www.water.ky.gov].

401 KAR 6:350E Monitoring well construction practices and standards is approved for filing.



Charles G. Snaveley, Secretary
Energy and Environment Cabinet

7/9/2019
Date

PUBLIC HEARING AND PUBLIC COMMENT PERIOD: A public hearing on this administrative regulation shall be held on Thursday, August 22, 2019 at 6:00 p.m. Eastern Standard Time at the Department for Environmental Protection, Training Room B, 300 Sower Boulevard, Frankfort, Kentucky 40601. Individuals interested in being heard at this hearing shall notify this agency in writing by 5 workdays prior to the hearing of their intent to attend. If no notification of intent to attend the hearing is received by that date, the hearing may be canceled. This hearing is open to the public. Any person who wishes to be heard will be given an opportunity to comment on the proposed administrative regulation. A transcript of the public hearing will not be made unless a written request for a transcript is made. If you do not wish to be heard at the public hearing, you may submit written comments on the proposed administrative regulation. Written comments shall be accepted through August 31, 2019. Send written notification of intent to be heard at the public hearing, or written comments on the proposed administrative regulation, to the contact person.

Contact person: Carole J. Catalfo
Internal Policy Analyst, RPPS,
Division of Water, 3rd Floor
300 Sower Boulevard
Frankfort, Kentucky 40601
Phone (502) 564-3410
Fax (502) 564-9003
Email: water @ky.gov (Subject line: "Chapter 6 regulations")

REGULATORY IMPACT ANALYSIS AND TIERING STATEMENT

401 KAR 6:350E

Contact Person: Carole J. Catalfo
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 establishes requirements and minimum standards for the location, construction, modification, and abandonment of monitoring wells and temporary monitoring 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 224.70-110 authorize the cabinet to establish administrative regulations to protect water quality. KRS 223.435 requires the Secretary of the Cabinet to promulgate administrative regulations establishing standards of practice for water well construction. This administrative regulation establishes requirements for the construction of monitoring wells, including temporary monitoring wells, and provides minimum standards for location, construction, modification, and abandonment.

(d) How this administrative regulation currently assists or will assist in the effective administration of the statutes: This administrative regulation establishes requirements and minimum standards for the location, construction, modification, and abandonment of monitoring wells and temporary monitoring 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 to this administrative regulation revises language to conform to the requirements of KRS 13A, adds "well driller assistant" roles and responsibilities, clarifies that the administrative regulation applies to monitoring wells rather than water supply wells, replaces "flood zones" with "identified special flood hazard area" to align with current terminology, replaces "known" with "base" flood elevation; adds additional requirements for temporary monitoring wells installed by the direct push method; clarifies monitoring well abandonment requirements regarding the plugging of boreholes, and updates Materials Incorporated by Reference.

(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 as 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 monitoring 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 224.70-110 authorize the cabinet to establish administrative regulations to protect water quality. KRS 223.435 requires the Secretary of the Cabinet to promulgate administrative regulations establishing standards of practice for water well construction. This administrative regulation establishes requirements for the construction of monitoring wells, including temporary monitoring wells, and provides minimum standards for location, construction, modification, and abandonment.

(d) How the amendment will assist in the effective administration of the statutes: 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 monitoring 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 monitoring 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: Monitoring well driller and monitoring well driller assistant certification fees, Clean Water Act Section 106 grant 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 monitoring wells.

FISCAL NOTE ON STATE OR LOCAL GOVERNMENT

401 KAR 6:350E

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 monitoring 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 6:350E

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 monitoring 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 monitoring 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 monitoring 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 monitoring 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”.

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, borehold 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 "Kentucky Monitoring Well Variance Request", DEP No. DOW6090, July 2019. This document is used to request a variance from practices and standards established in administrative regulations for monitoring well construction, modification, or abandonment.

This document consists of one (1) page.

Detailed summary of changes:

Reformatted, DEP Form No. added, and date revised.

Added address and telephone number for the Division of Water.

Under "Well Location" added fields for Quadrangle Code, County Code, AI Number, and Latitude and Longitude.

Under "Well Owner Identification" added a field for email address.

Under "Reason For Variance", added field for Attach All Supporting Documentation, administrative regulation citation, and a check box for Blanket Variance.

Replaced "Well Construction Requirements" with "Well Construction Or Abandonment Requirements".

Added fields for Casing and Screen Information.

Expanded field for Sealing Material Requirements For Plugging.