
MEMORANDUM

TO: SAL LOBIANCO, GENERAL MANAGER- MP&W
GREG MANDSAGER, CITY ADMINISTRATOR- CITY OF MUSCATINE

FROM: DAPHNEY DANIEL, Legal Intern- MP&W
BRANDY OLSON, Director Legal & Regulatory Services- MP&W

SUBJECT: WELL ORDINANCE

DATE: SEPTEMBER 26, 2017

PURPOSE & GOALS

The purpose of the proposed ordinance is to protect public health and safety by regulating the construction of new wells and reuse of old wells for private use within City limits. The goals of the proposed ordinance are: (1) protect the health and welfare of the community; (2) maintain water quality in the City; and, (3) preserve the community's trust in the public water supply. The proposed ordinance does not affect existing property rights because it neither requires owners of compliant wells currently in operation to cease operation of their wells, nor does it prevent owners from replacing an older operating well with a new compliant well. The ordinance mandates property owners must plug abandoned or unused wells, and prevents reopening and operating previously abandoned wells because old, decaying wells can serve as points of contamination to the public water supply.¹

The ordinance is in line with MP&W's Service Rules concerning private wells. MP&W's Service Rules prohibit use of private wells on properties that are also served by the Water Utility. Exceptions may be granted where the private well is only used for irrigation purposes and in such a case, plumbing modifications are required to address the cross-contamination risk, such as the installation and annual testing of backflow prevention devices.

JUSTIFICATION

1. Contamination Risk.

Private wells can serve as points of entry for contaminants and other sanitary hazards in the public water supply. This can occur when a facility is served by both the public water supply and private water supply but there is no separation of the water supplies within a facility. To ensure wells live up to design, well owners must take protective measures against contamination including regular maintenance, water testing, and proper protection of the source area.² Unfortunately, there is evidence that a significant amount of private well owners do not implement the proper protective measures and as a result, pose a risk to the public water supply.

The rationale behind preventing the operation of formerly abandoned wells is that most older wells were constructed in a time when little or no regulations were put into place to ensure the quality of well construction. Older wells can be affected when the well's steel casing develops small leaks that allow poor quality shallow groundwater to enter the water supply.³ Even with proper maintenance, an owner of an older well may find their water supply contaminated because of a failure in the well's construction.

2. *Sand Point Wells.*

The ordinance prohibits sand point or shallow wells (SPWs). SPWs pose a greater risk to public health than dug wells because of the higher possibility of contamination and the wider array of possible contaminants. Generally, as water moves through deeper sand and porous rock, the water is naturally filtered- as is the case with water pumped for the municipal water supply out of the Muscatine Aquifer. SPWs have higher levels of unnatural contaminants when compared to deeper wells in the same area because they obtain water from groundwater located right at or beneath the water table.⁴ These sources of groundwater pose three specific threats. First, the groundwater located in shallow aquifers is less protected than groundwater found in deeper aquifers and therefore more susceptible to contamination. Activity occurring on the topsoil over a shallow aquifer can have significant impact on the water quality of the well. Contaminants can quickly seep through the thin layer of topsoil and penetrate the water table. Since the groundwater only travels through the already contaminated sand and porous rock close to the well, the water is not naturally filtered. As result, groundwater pumped from SPWs often contain higher levels of bacteria, nitrates, pesticides and other chemicals, than groundwater pumped from dug wells.⁵

Proponents of SPWs maintain that the amount of casing in a well is usually more important than the well's total depth. This is true, but only in places where SPWs are best fitted: sparsely populated, non-agrarian areas, where the well owner has control over land uses both around the well and uphill/up gradient from the hill. Based on these qualifications, even the outskirts of Muscatine are not suitable for SPWs. In fact, there are nearby areas of Muscatine County where water from SPWs are high in nitrates and subdivision's private water systems have been forced to close due to high contaminate levels.

3. *Failure of Individuals to Test and Maintain Private Wells*

Many private well owners do not perform the legally required regular testing and maintenance necessary to maintain safe water from their wells. Many owners incorrectly assume contaminants change the way well water smells, tastes or looks. The potability of well water can only be determined by laboratory testing.⁶ A substantial portion of the water samples submitted to the University of Iowa Hygienic Laboratory by private well owners for testing do not meet recommended standards for safe drinking water.⁷ Nearly 10,000 private water supply samples are submitted to the Iowa State University's Extension Iowa Water Center annually.⁸ Approximately 40% of the samples show unsafe bacteria levels and 15–20% exceed the maximum recommended nitrate level for drinking water.⁹ There is little that can be done to compel private well owners to conduct proper testing and maintenance. Private well owners are solely responsible for testing the water quality in their wells.¹⁰ The Iowa Department of Natural Resources (IDNR) strongly recommends that private well owners test their well water annually, but there is no law or regulation mandating testing.¹¹ Even if testing was mandated, there are no state or federal water quality standards that private wells must meet.¹² Regulations for "private water systems", such as those in subdivisions served by a private well are a bit more stringent but suffer from the same issues of non-compliance.

MP&W is responsible for performing routine and thorough testing of the public water supply. If the water is not safe to drink, MP&W must inform its customers and take immediate action to correct it. If a private well led to contamination of the City's water, the well owner may be legally responsible, but the public will put the blame on MP&W and the City. In such a situation, MP&W would ultimately be responsible and would have to answer to both IDNR and EPA because the Utility holds the license to operate the public water system.

EXISTING PRIVATE WELLS WITHIN CITY LIMITS

We are aware of one large industrial customer in Muscatine that has private wells supplying water for their industrial processes. These wells are on private property and operate separately from the public water system. This facility has the required backflow prevention devices installed. These are not SPWs. The facility operating these wells is subject to state laws regarding these activities. To the best of our knowledge, this facility is compliant with the MP&W Service Rules and state regulation. We are also aware of one residence on a large infill lot that appears to have its own water source, and is not connected to the public water system. The owners of this home are licensed well drillers. This proposed ordinance does not affect these existing wells.

On the opposite end of the spectrum, we are aware of one commercial property owner who, in the last year, reactivated a SPW at a site that is inappropriate for such a water source (within the grounds of a long-standing metal recycling/scraping operation). This customer also has septic field on this property. This customer does not want to pay for drinking water, or storm water/sewer charges. When this customer decided to reactivate this dormant well, MP&W required the customer to physically disconnect from the public water system due to the high risk of contamination (licensed plumber did the work and MP&W staff verified). This customer failed to get a IDNR permit to reactive this well and under IDNR rules, was ineligible for a permit as a SPW is not permitted in situation where the water is for "public use". This situation was reported to IDNR for potential enforcement but due to staffing shortages and backlog, they have yet to act. This is exactly the situation we could avoid with the passing of this proposed ordinance.

Compliant wells that are currently in operation would not be affected by the proposed ordinance until the well owner terminates operation.¹³ Furthermore, the ordinance does not prohibit the construction of new wells to replace existing wells currently in operation.¹⁴ In balancing what is best for public health and curbing the risks posed by private wells, it is preferable that well owners replace older wells constructed before quality control standards were in place with a new well rather than continuing to use an older well. Presently, Iowa requires homeowners to "hire an individual Iowa DNR Certified Well Driller to perform the well construction or perform the actual work themselves".¹⁵ Limiting the scope of the ordinance to new wells and allowing existing and replacement wells reaffirms that the goal of the ordinance is foremost, to protect public health and safety.

AUTHORITY

The proposed ordinance prohibits new construction of SPWs.¹⁶ The ordinance would also prevent property owners from bringing formerly abandoned wells back into operation.¹⁷ The ordinance provides exceptions for which new private wells could be authorized, in limited circumstances. The ordinance is compatible with MP&W's Service Rules. The City of Muscatine has the authority to enact a ban on the construction of private wells and the proposed ordinance does not conflict with current laws. Presently there is no existing state and county legislation limiting a City's ability to regulate wells within City limits.

By adopting this ordinance, Muscatine would join many Iowa communities in taking steps to protect water quality and public health. As of 2015, 132 towns, cities and counties in Iowa already had ordinances regulating private wells.¹⁸ Some municipalities like Coralville, Lone Tree and Burlington broadly prohibit private wells within their city limits.¹⁹ Smaller, rural communities like Wyoming and Zearing, require a connection to the public drinking supply, but place no restrictions on the construction and use of private wells, and do not require a permit process.²⁰ IDNR found the latter type of ordinance "unacceptable".²¹ IDNR encourages strong well ordinances. To facilitate these ordinances, IDNR adopted a "simpler, less burdensome way of coordinating and resolving any potential jurisdictional conflicts" with local authority regarding well regulation.²² IDNR indirectly enforces local ordinances regulating wells. Now, an applicant must present evidence from their municipal government verifying that they are sanctioned to construct a well on their property to obtain an IDNR well construction permit.²³ IDNR's indirect enforcement results in low administrative cost to municipalities like Muscatine, while allowing them to exercise the authority granted to them under the Iowa Code.

RECOMMENDATION

Given how important our public water supply is to public health and safety, the economic vitality of our community, and the increasing awareness of water quality issues, adoption of this Well ordinance is a preemptive and proper act by the City Council.

MP&W recommends the City adopt the enclosed ordinance.

¹ §8-10-8, Ln. 68-70; CLIFF TREYENS, What's A Private Well Owner to Do? Eight Tips For Maintaining Your Well 35 (National Ground Water Association, 2007); § 8-10-3.

² TOM GLANVILLE, GOOD WELLS FOR SAFE WATER Pm-840 1(Iowa State University Extension, 1993).

³ IDNR, Contamination in Karst, <http://www.iowadnr.gov/Environmental-Protection/Water-Quality/Private-Well-Program/Private-Well-Testing/Contamination-in-Karst> (last visited Oct. 11, 2016).

⁴ Glanville (1993).

⁵ TOM GLANVILLE, JAMES L. BAKER, JAMES K. NEWMAN, STATISTICAL ANALYSIS OF RURAL WELL CONTAMINATION AND EFFECTS OF WELL CONSTRUCTION (Iowa State University Digital Repository, 1997); EPA, About Private Water Wells, <https://www.epa.gov/privatewells> (last visited Sept. 26, 2017); explaining the contamination risks with private wells.

⁶ 2015 INTERNATIONAL PLUMBING CODE AND COMMENTARY 6-2 §602.3 (International Code Council, INC., 2014).

⁷ Glanville (1993), *supra* n.2, at 1.

⁸ *Id.*

⁹ *Id.*

¹⁰ WELL OWNER'S MANUAL 21 (Water Systems Council, 2015).

¹¹ IDNR, Private Well Testing <http://www.iowadnr.gov/Environmental-Protection/Water-Quality/Private-Well-Program/Private-Well-Testing> (last visited Oct. 11, 2016).

¹² EPA, About Private Water Wells <https://www.epa.gov/privatewells/about-private-water-wells> (last updated Sept. 26, 2017); explaining that the Environmental Protection Agency (EPA) only regulates public water systems. Private water supplies are not subject to EPA standards because the EPA does not have the authority to regulate private drinking water wells.

¹³ §8-10-4, Ln. 25–27.

¹⁴ §8-10-6, Ln. 30–34.

¹⁵ IDNR, Contractor Certification, <http://www.iowadnr.gov/Environmental-Protection/Water-Quality/Private-Well-Program/Contractor-Certification> (last visited Oct. 11, 2016).

¹⁶ Proposed Ordinance §8-10-2, Ln. 17–18.

¹⁷ *Id.*

¹⁸ IDNR, Listing of Approved City and County Private Well Ordinances, (2015), <http://www.iowadnr.gov/Portals/idnr/uploads/ust/appwellordinance.pdf>.

¹⁹ *Id.* at 2–17.

²⁰ *Id.*

²¹ *Id.*

²² IDNR, Listing of Approved City and County Private Well Ordinances, 1 (2015), <http://www.iowadnr.gov/Portals/idnr/uploads/ust/appwellordinance.pdf>.

²³ *Id.*

**TITLE 8-BUILDING REGULATIONS
CHAPTER 11-PRIVATE WELLS**

SECTIONS:

- 8-11-1 Purpose
- 8-11-2 Prohibition
- 8-11-3 Shallow Well
- 8-11-4 Existing Well
- 8-11-5 Exceptions
- 8-11-6 Right to Inspection
- 8-11-7 Termination & Abandonment

8-11-1 Purpose. The purpose of this chapter is to protect the public health, safety and welfare of the people of the City of Muscatine by prohibiting the construction of private wells within the corporate limits that could become possible points of entry for contaminants into the City's water supply, otherwise interfere with the municipal water system, or pose a risk to public health.

8-11-2 Prohibition. It is unlawful for any person, to drill, construct, operate, maintain or reopen a well or wells within the city limits for the purpose of bringing to the surface of the ground any subterranean water. For the purposes of the chapter, "person" means private citizen, corporation or any other entity excluding the City of Muscatine and the Board of Water, Electric and Communications Trustees.

8-11-3 Shallow Wells. Construction or operation of a shallow well, known also as a "sand point", shall not be allowed.

8-11-4 Existing Wells. This chapter shall no apply to any well existing and in operation within the City limits on the date of the passage of the ordinance codified in this chapter and is also in compliance with the Board of Water, Electric and Communication Trustee's Service Rules; unless in the City's judgement an existing well is in such a state of disrepair, poorly constructed, has poor water quality, or raises other concerns such that the health and safety of the City's public water supply could be compromised.

This chapter shall not apply to the replacement of existing wells in operation within the City limits on the date of the passage of the ordinance codified in this chapter. If a replacement well is installed, then the abandoned well is required to be plugged according to Chapter 39 of the Iowa Administrative Code. Any such replacement wells are subject to current state and local regulations.

8-11-5 Exceptions. This chapter shall not apply to a private well if it meets the following criteria and meets the approval of the Board of Water, Electric and Communications Trustees:

- A. No part of the tract of land on which the private well is proposed is within 500 feet of the pubic water system
- B. The property owners can produce clear and convincing evidence that there is good cause to allow construction of a private well on their property; or,
- C. The well will be used solely as part of a closed-loop geothermal heating system

8-11-6 Right to Inspection. All wells shall meet all applicable city, county, state and federal rule, regulations and laws. Any private well allowed under this ordinance, and water system maintained upon the same property, may be inspected and/or tested as required by City and/or the Board of Water, Electric and Communications Trustees. In the event the private well or water system does not meet adequate standards, the inspecting authority shall notify the well owner in writing for the failure to meet applicable standards and may require corrective action or termination of use.

8-11-7 Termination & Abandonment. In the event any private well or water system is no longer being used, whether due to failure to comply with applicable standards regulation or law; the well owners connection to the city water system; abandonment; lack of use or other reasons, the well owner is prohibited from further use of the well. The well owner is responsible for plugging the well in accordance with the standards and guidelines of the Iowa Department of Natural Resources and Chapter 39 of the Iowa Administrative Code within 14 days

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