



2015 Yellowstone Drive  
Marshall, WI 54440  
Mark.Borchardt@ars.usda.gov  
715-387-4943

Well owner: Dave Mangin

Date: 10/24/2018

Description: Outdoor tap

All analyses completed by quantitative polymerase chain reaction (qPCR)

Test category	Microorganism	Result	Concentration (genomic copies/L)
Human-specific microorganisms	Adenovirus group A	Negative	
	Adenovirus groups A-F	Negative	
	Adenovirus groups C, D, F	Negative	
	Bacteroidales-like Hum M2	Negative	
	Enterovirus	Negative	
	Norovirus genogroup I	Negative	
	Norovirus genogroup II	Negative	
	Human polyomavirus	Negative	
	Human Bacteroides	Negative	
	Bovine-specific microorganisms	Bacteroidales-like cow M2	Negative
Bacteroidales-like cow M3		Negative	
Bovine adenovirus		Negative	
Bovine enterovirus		Negative	
Bovine polyomavirus		Negative	
Bovine viral diarrhea virus type 1		Negative	
Bovine viral diarrhea virus type 2		Negative	
Coronavirus		Negative	
Ruminant Bacteroides		Negative	
Campylobacter		Negative	
Cryptosporidium spp.		Negative	
Enterohemorrhagic E. coli (eae gene)		Negative	
Enterohemorrhagic E. coli (stx1 gene)		Negative	
Non-specific microorganisms	Enterohemorrhagic E. coli (stx2 gene)	Negative	
	Giardia lamblia	Negative	
	Rotavirus group A (NSP3 gene)	Negative	
	Rotavirus group A (VP7 gene)	Negative	
	Rotavirus group C	Negative	
	Salmonella (invA gene)	Negative	
	Salmonella (trf gene)	Negative	
Water quality indicator	Pepper mild mottle virus	Negative	

See reverse for explanations regarding results and analysis  
Call Dr. Mark Borchardt for more information: (715) 387-4943

#### Explanation of analyses

The **test category** describes what the microorganism indicates when detected.

- Human-specific microorganisms are viruses and bacteria that are only found in human wastewater.
- Bovine-specific microorganisms are viruses and bacteria that are only found in cattle manure.
- Non-specific microorganisms are disease-causing viruses and bacteria that are found in human wastewater, cattle manure, and feces from other animals.
- The water quality indicator does not cause disease in humans but indicates that there is a fast route for water to travel from the surface to the groundwater.

**Multiple tests for one microorganism:** We use multiple tests for some microorganisms, which increases the odds of detection.

- When multiple tests are used for a single microorganism, it is listed more than once with the test designation following in parentheses (e.g., "Salmonella (invA gene)").
- A positive for any test for a particular microorganism indicates its presence, and it is common for one test to be positive while another is not.

**Result (positive/negative)** indicates whether the microorganism was present in the sample.

**Genomic copies per liter (L)** are the units for qPCR analysis. One genomic copy can typically be translated to one microorganism, and one liter is 1.06 quarts.

**Microorganism concentrations** in groundwater vary with time, distance from source, source strength and quantity, precipitation, and dilution by non-contaminated water. There is not a simple or direct translation of a concentration to health risk. The presence of disease-causing microorganisms may indicate a health risk regardless of concentration.

#### Explanation of results

Your well was negative for all microorganisms tested.

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2015 Yellowstone Drive  
Marshall, WI 54440  
Mark.Borchardt@ars.usda.gov  
715-387-4943

Well owner: Jesse Milanowski

Date: 10/24/2018

Description: Outdoor tap

All analyses completed by quantitative polymerase chain reaction (qPCR)

Test category	Microorganism	Result	Concentration (genomic copies/L)
Human-specific microorganisms	Adenovirus group A	Negative	
	Adenovirus groups A-F	Negative	
	Adenovirus groups C, D, F	Negative	
	Bacteroidales-like Hum M2	Negative	
	Enterovirus	Negative	
	Norovirus genogroup I	Negative	
	Norovirus genogroup II	Negative	
	Human polyomavirus	Negative	
	Human Bacteroides	Negative	
	Bovine-specific microorganisms	Bacteroidales-like cow M2	Negative
Bacteroidales-like cow M3		Negative	
Bovine adenovirus		Negative	
Bovine enterovirus		Negative	
Bovine polyomavirus		Negative	
Bovine viral diarrhea virus type 1		Negative	
Bovine viral diarrhea virus type 2		Negative	
Coronavirus		Negative	
Ruminant Bacteroides		Negative	
Campylobacter		Negative	
Cryptosporidium spp.		Negative	
Enterohemorrhagic E. coli (eae gene)		Negative	
Enterohemorrhagic E. coli (stx1 gene)		Negative	
Non-specific microorganisms	Enterohemorrhagic E. coli (stx2 gene)	Negative	
	Giardia lamblia	Negative	
	Rotavirus group A (NSP3 gene)	Negative	
	Rotavirus group A (VP7 gene)	Negative	
	Rotavirus group C	Negative	
	Salmonella (invA gene)	Negative	
	Salmonella (trf gene)	Negative	
Water quality indicator	Pepper mild mottle virus	Negative	

See reverse for explanations regarding results and analysis  
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#### Explanation of analyses

The **test category** describes what the microorganism indicates when detected.

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- Bovine-specific microorganisms are viruses and bacteria that are only found in cattle manure.
- Non-specific microorganisms are disease-causing viruses and bacteria that are found in human wastewater, cattle manure, and feces from other animals.
- The water quality indicator does not cause disease in humans but indicates that there is a fast route for water to travel from the surface to the groundwater.

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- When multiple tests are used for a single microorganism, it is listed more than once with the test designation following in parentheses (e.g., "Salmonella (invA gene)").
- A positive for any test for a particular microorganism indicates its presence, and it is common for one test to be positive while another is not.

**Result (positive/negative)** indicates whether the microorganism was present in the sample.

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Your well was negative for all microorganisms tested.

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2015 Yellowstone Drive  
Marshfield, WI 54449  
Mark.Borchardt@ars.usda.gov  
715-387-4943

Well owners: Jim and Marianne Walker Date: 10/24/2018 Description: Outdoor tap

All analyses completed by quantitative polymerase chain reaction (qPCR)

Test category	Microorganism	Result	Concentration (genomic copies/L)
Human-specific microorganisms	Adenovirus group A	Negative	
	Adenovirus groups A-F	Negative	
	Adenovirus groups C, D, F	Negative	
	Bacteroidales-like Hum M2	Negative	
	Enterovirus	Negative	
	Norovirus genogroup I	Negative	
	Norovirus genogroup II	Negative	
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Bovine adenovirus		Negative	
Bovine enterovirus		Negative	
Bovine polyomavirus		Negative	
Bovine viral diarrhea virus type 1		Negative	
Bovine viral diarrhea virus type 2		Negative	
Coronavirus		Negative	
Ruminant Bacteroides		Negative	
Non-specific microorganisms		Campylobacter	Negative
	Cryptosporidium spp.	Negative	
	Enterohemorrhagic E. coli (see gene)	Negative	
	Enterohemorrhagic E. coli (stx1 gene)	Negative	
	Enterohemorrhagic E. coli (stx2 gene)	Negative	
	Giardia lamblia	Negative	
	Rotavirus group A (NSP3 gene)	Negative	
	Rotavirus group A (VP7 gene)	Negative	
	Rotavirus group C	Negative	
	Salmonella (invA gene)	Negative	
Salmonella (fliC gene)	Negative		
Water quality indicator	Pepper mild mottle virus	Negative	

See reverse for explanations regarding results and analyses  
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2015 Yellowstone Drive  
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Well owners: Tarion and Stacy O'Carroll Date: 10/24/2018 Description: Outdoor tap

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Bovine viral diarrhea virus type 1		Negative	
Bovine viral diarrhea virus type 2		Negative	
Coronavirus		Negative	
Ruminant Bacteroides		Negative	
Non-specific microorganisms		Campylobacter	Negative
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