

Find and fix response for systems with confirmed coliform bacteria:

Level 2 Assessment – Coliform Bacteria Causes

A Level 2 Assessment inspection is required when the presence of coliform bacteria is confirmed in a water system. The inspection is used to **find** site specific potential causes and identify a plan with corrective actions to **fix** the problem. In situations where the initial **fixes** are not successful, the corrective action plan is updated and may include additional investigative work to find problems that were not identified during an initial investigation.

In most situations, the Level 2 Assessment will be able to identify corrective actions to help eliminate the coliform bacteria contamination in the water system. In addition to completing site specific corrective actions most water systems will also be required to chlorinate the well and water piping to disinfect the system.



Well Head Issues


Common issues that may cause coliform bacteria in water samples

Potential Cause	Corrective Action
Well cap and conduit <ul style="list-style-type: none"> Broken cap, loose cap or missing bolts Broken conduit Damaged gasket Missing screen Overgrown vegetation Unsanitary condition around the well casing 	The wellhead has been compromised. When these issues occur, there is an increase in the chance that insects, and other vermin may enter the well. Repair the cap or conduit. Prior to chlorinating, remove debris or vermin found in the well.
Well Casing and well head <ul style="list-style-type: none"> Short well casing Slope toward the well or erosion around the well casing 	Flooding events or improper drainage may allow water to pond around the well or enter the well. Correct the grade and/or casing height.

Potential Cause	Corrective Action
Dead-end piping or rarely used devices	Develop a water flushing plan or remove dead-end piping that is no longer needed.
Leaky/busted/rusted water lines.	Repair piping.

Piping, tanks & treatment issues

<p>Cross Connections – connections between potable water and non-potable water</p> <ul style="list-style-type: none"> • Water treatment backwash piping lacking air gap where it enters sewer piping, • Threaded faucets lack vacuum breaker - utility sink, outside hose bibs • Lack of cross connection device on irrigation or boiler system 	<p>Install and maintain s. SPS 382.41 cross connection protection.</p>
<p>Storage/treatment issues</p> <p>Malfunctioning pressure tank resulting from age, corrosion or faulty bladder (in captive air tanks)</p>	<p>Repair or replace the pressure tank.</p>
<p>Treatment system not being maintained</p> <ul style="list-style-type: none"> • Exceeded life of sediment filter • Device not cleaned • Maintenance work was not performed 	<p>Perform regular treatment system maintenance and develop a maintenance schedule.</p>

Potential Cause		Corrective Action
<p>Sampling errors</p> <ul style="list-style-type: none"> • Sprayer faucet used • Finger touched inside bottle or cap • Cap placed on a contaminated surface 	 <p><i>Poor Sampling Techniques</i></p>	<p>Practice good sample collection practices.</p> <p>Click here for sampling directions.</p>

Additional potential causes of water samples containing coliform bacteria

(May require more investigation or work to identify and/or resolve the problem)

Potential cause	Corrective Action
<p>Leaky Pitless Adapter Unit</p>	<p>Conduct pressure test. If pressure not holding, remove soil around well casing down to pitless adapter unit. Determine where the leak is coming from and fix.</p>
<p>Biofilm in well/water system</p>	<p>Conduct additional well disinfection techniques. May need to physically and/or chemically remove biofilm from well casing.</p>

Potential cause	Corrective Action
Cracked drop pipe that holds submersible pump	Replace damaged drop pipe with new piping.
Lateral water line between well and pump room leak	Check if pressure is holding on pressure gauge during non-use period. Repair the water line if a pressure drop occurs.
Stagnant water in well/water - Infrequent use of water from a well, for a building, section of piping or device.	Implement a flushing plan to eliminate stagnant water in water system.
Extreme Weather (lightning, flooding, drought) <ul style="list-style-type: none"> • Flood waters may seep around or enter the well • Lightening may damage the pump or cause a loss of pressure during a power outage • Water table height may require pump height changes 	Review and repair damage to the water system.

Site specific review of the well

A site-specific review of the well construction and local geology may be needed when corrective actions and chlorination attempts fail to consistently produce water without coliform bacteria. Assistance from a well driller, pump installer, or environmental consultant along with DNR staff member input may be needed to better define the water quality problem with the well and options to correct the problem. The feasibility of repairing a well or constructing a new well that would produce water without coliform bacteria are considered in this review. Microbial treatment equipment is only approved as a potential solution when other solutions are not feasible. Microbial treatment can be expensive to install and maintain. Your DNR field contact will be able to assist you, if a site-specific review is needed.

Potential Cause	Correction
Damaged casing <ul style="list-style-type: none"> • Corroded well casing • An opening exists at the weld joint where two casing segments are attached. 	Pressure test the casing and determine if casing repair is feasible. or Evaluate the feasibility of constructing a new well or connecting to another water source.
The well is constructed in a manner that makes it vulnerable to surface water contamination <ul style="list-style-type: none"> • Aquifer is contaminated or <ul style="list-style-type: none"> • Inadequate well construction 	Construct a new well designed to provide water without coliform, if feasible. or Connect to an alternative water source. or Obtain DNR approval to proceed to install a site-specific Department of Safety and Professional Services approved treatment system.

For more information regarding Transient Non-community Public Drinking Water, please visit our website <https://dnr.wisconsin.gov/topic/DrinkingWater/TNownerOperator.html> or contact the DNR Service Center Desk for assistance at (888) 936-7463