

# Minnesota Well Management News



A Minnesota Department of Health Publication

Minnesota Well Management News

Volume 35, No. 2

Fall 2015/Winter 2016

## Introducing the Minnesota Well Index

The Minnesota Well Index (MWI) was launched by the Minnesota Department of Health (MDH) on November 4, 2015. It is a new and improved computer application that can be used to find well, geological, and hydrologic information within Minnesota. Users can obtain scanned copies of original well records; geologic stratigraphy; water sample results; and pump test data when available. MWI replaces the County Well Index (CWI) Online application, which has been an important resource to contractors, consultants, engineers, planners, real estate agents, the public, and others. MWI has updated and improved search features for finding well information. You can select a well on the map to get well information, or you can search for well records by address; township, range, and section; Minnesota Unique Well Number; or owner name. MWI has zoom and pan features on the map so that you can zoom in and out to any property in Minnesota!



Screenshot of new Minnesota Well Index (MWI) computer application, launched on November 4, 2015.

Not all MWI information has been verified. Well owner name and address can change over time, and sometimes wells are modified or reconstructed and changes may not be reported and get updated in MWI. Some information may be incomplete or incorrect. When searching for well information, users are reminded to search by multiple identifiers. If you cannot find a well record searching the well owner's name, try searching by unique well number; address; or by township, range, and section numbers.

If you have any questions or comments about MWI, or need help searching for well information, please contact the Well Management Section at 651-201-4600 or [health.minnesotawellindex@state.mn.us](mailto:health.minnesotawellindex@state.mn.us).

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## How Long do Water-Supply Wells Last?

Minnesota Department of Health (MDH) Well Management Section staff are often asked, “How long will a water-supply well last?” The correct answer is, “It can vary widely.” Some wells in use today are over 100 years old. Some wells fail after only a few months or years. An average may be 30-50 years, but factors like age; water quality; stability of geologic aquifer materials; well construction materials including casing, well screens, and grout; soil chemistry; and workmanship can all affect the length of time a well will remain functional. One thing is for sure, wells do not last forever and will fail at some time. Failure may mean that the well yield drops or the well goes dry, it may pump sand due to a hole that has rusted through the well casing, casing collapse, biofouling, or the open bore hole in a bedrock aquifer well may collapse.



Well at KSTP Broadcasting, St. Paul, Minnesota, drilled in 1959.



Corroded 4-inch diameter, steel drop-pipe removed from KSTP broadcasting well.

One case in point is a well at KSTP Broadcasting in St. Paul, Minnesota. The well was constructed in 1959 and was used for many years to supply water to the broadcasting station which is located on University Avenue, just west of Highway 280. The well was constructed with 12-inch and 8-inch diameter steel well casings. The 8-inch liner casing extended from the surface to the depth of 451 feet. The total depth of the well was 525 feet and it obtained water from the Jordan Sandstone aquifer. McCarthy Well Company (McCarthy) was hired to permanently seal the well in 2015. When McCarthy attempted to remove the submersible pump from the well, the 4-inch diameter, steel drop-pipe, used to suspend the submersible pump in the well, broke due to corrosion, and the pump fell down the well and became stuck in the well. McCarthy fished the pump out of the well and MDH televised the well with a

downhole well inspection camera. MDH identified holes corroded through the 8-inch liner casing at the depth intervals of 116-118 feet, and also at 437-446 feet. In this case, this double cased, cement grouted well lasted for less than 56 years. It appears that water quality and corrosion reduced the lifetime of this well.



Hole in well casing, KSTP Broadcasting, St. Paul, Minnesota.

In 2006, a property owner in Dakota County reported a problem with his polyvinyl chloride (PVC) cased, domestic well that had been constructed in 2002. The pump had failed and he had called a well contractor to come out and fix the well. The well owner reported that the contractor had trouble removing the pump. After a new pump was installed, the well pumped sand. MDH inspected the well and found a large break in the PVC well casing at the depth of 89 feet. Rocks were visible through the hole in the casing. This well lasted only four years before mechanical failure of the casing rendered it useless.



Hole in 4-inch diameter PVC well casing at depth of 89.9 feet, Dakota County, Minnesota.



Hole in 4-inch well casing, Polar Foods, Pine Bend, Dakota County, Minnesota.

Time was not kind to a third well inspected recently in Dakota

County at a facility called Polar Foods. That 4-inch diameter, steel cased, 508-foot deep well, constructed in 1974, had to be overdrilled and removed due to drill rods that became stuck in the well while the drilling contractor was trying to clean out the well for permanent sealing. Boart-Longyear was hired to overdrill and extract the well casing and stuck drill rods. Inspection of the well casing, as it was being extracted, revealed a hole corroded through the 4-inch casing at the approximate depth of 40 feet. Once again, corrosion appeared to be the culprit. This well lasted 41 years.

As you can see, time, corrosive environments, and mechanical failure led to the demise of these wells. It is important to remember that wells do not last forever, and to take this into account when considering use, repair, reconstruction, or permanent sealing and replacement of older wells.

## New Contractor Certifications\*

### Well Contractor

Theodore Van Beusekom  
Ingleside Engineering and Construction, Inc.  
Loretto, Minnesota

### Pump Installer

Wayne Juetten  
Hillman, Minnesota

Harvey H. Exsted  
Isle, Minnesota

### Pitless/Screen Contractor

Harvey H. Exsted  
Isle, Minnesota

Anthony S. Croat

Tony Croat d.b.a. Nesvold Pump and Well Service  
Madison, Minnesota

### Well Sealing Contractor

Harvey H. Exsted  
Isle, Minnesota

\*List includes new Contractor Certifications issued by the Minnesota Department of Health Well Management Section since publication of the *Spring/Summer 2015 Minnesota Well Management News*, and is current as of March 9, 2016.

## Minnesota Plumbing Code Revision

Minnesota Rules, chapter 4715 (Minnesota Plumbing Code), was deleted and replaced by Minnesota Rules, chapter 4714, on January 23, 2016. The new plumbing code adopts by reference, portions of the 2012 Uniform Plumbing Code (UPC) and adopts amendments which add, delete, or modify portions of the UPC. The UPC is a “national” plumbing code, established and amended every three years by the International Association of Plumbing and Mechanical Officials (IAPMO). The 2015 UPC has been released, but was not adopted in Minnesota. The new plumbing code contains significant changes to plumbing requirements in Minnesota. Licensing, continuing education, and plan review requirements and fees are unchanged.

In Minnesota, the Plumbing Code is adopted by the Minnesota Plumbing Board, and administered by the Minnesota Department of Labor and Industry (DLI) and local governments who adopt the plumbing code. The Minnesota Plumbing Code is referenced in a number of Minnesota rules administered by Minnesota Department of Health (MDH) including the Food Code, Public Water Rules, and Well Code.

Notable changes to the new plumbing code include:

- The new plumbing code prohibits the use of polyethylene (PE) and polyvinyl chloride (PVC) building supply pipe inside or under a building.
- New “building supply pipe” materials approved for use inside, under, and outside a building, include CPVC, PE-RT, PEX-AL-PEX, PP, and stainless steel, in addition to certain types of brass, copper, ductile iron, galvanized steel, malleable iron, and PEX. (“*Building supply pipe*” is a new term replacing what the old plumbing code referred to as “water service pipe” and what the well rules call a “discharge line” or “suction line.”) Refer to: [What you need to know about utility service connections in the 2015 Minnesota Plumbing Code](http://www.doli.state.mn.us/CCLD/PDF/pe_usc.pdf) (www.doli.state.mn.us/CCLD/PDF/pe\_usc.pdf.) The new plumbing code does not allow ABS or PB building supply pipe.
- Pipe, tube, fittings, solvent cements, thread sealants, solders, and flux used in potable water systems supplying drinking water must meet NSF Standard 61.
- Freeze-proof drain-back yard hydrants are allowed where located at least 2 feet above the water table and at least 10 feet from a sewer or similar source of contamination. Unlike the previous Chapter 4715 rules, installation no longer requires administrative authority (DLI or the local government enforcing the plumbing code) approval.
- The new plumbing code allows considerably different plastic sewer pipe materials for drain, waste, and vent (sewer) pipe compared to the previous plumbing code. This becomes important for situations where the setback distance required between a well and a buried sewer pipe can be reduced for a sewer constructed of plastic pipe meeting plumbing code standards. The old rules allowed ABS pipe meeting ASTM D2751, the new rules do not. The new rules allow ABS pipe meeting ASTM D2680 and ASTM D1527 (the old rules did not.) The new rules allow coextruded ASTM F1488 (the old rules did not.) The new rules do not allow PVC meeting ASTM D2949, D3034, F679, and F789 (they were allowed under the old rules.) An important side note: the DLI has reported that D3034 sewer pipe may be used if approved by the administrative authority. The new rules do not allow some Federal Specifications including: L-P-322a, L-P-320a, L-P-001221, and WW-P-00380a; Commercial Standards CS270 and CS272; Federal Housing Administration Standard FHA-MPS; and Canadian Standards Association CSA-B181.1 and CSA-B181.2. (They were allowed in the old rules.)

- The new plumbing code adopts the federal lead standard of 0.25 percent lead in the wetted surface material.
- Wetted surface materials used in water conditioning equipment, including equipment designed to remove health-related contaminants, must comply with the applicable NSF standard (such as 42, 44, 53, 55, or 62) listed in Chapter 14 of the UPC or must comply with ANSI/NSF Standard 61. Equipment must be labeled with the name of the manufacturer, or the plumber, or water conditioning contractor who assembles the system.
- The new plumbing code requires self-closing or self-closing metering faucets on lavatories intended to serve the transient public, and requires that metered faucets supply a maximum of 0.26 gallons per use.
- Color marking of potable and nonpotable water system piping is required where both are installed. The new plumbing code does not allow metal tags as were allowed under the old plumbing code.
- Backflow prevention device and assembly requirements are generally similar, but with some differences to those required in the previous plumbing code. The new plumbing code does not contain the detailed list of hazards and minimum allowable devices in the previous rules. The new rules add double check detector fire protection assemblies and reduced pressure detector fire protection assemblies and the corresponding ASSE standards.
- Single wall heat exchangers are allowed when: (1) connected to a 30 psi or less hot water boiler or 15 psi or less steam system; (2) using water or a heat transfer medium having a toxicity rating or class of 1; and (3) bearing a caution label.
- The previous plumbing code requirement to rebuild Reduced Pressure Zone backflow prevention devices every five years was not adopted. The new plumbing code will still require annual inspection of Reduced Pressure Principle Backflow Prevention Assemblies (Note: the new wording change and acronym “RP,” not “RPZ”) as well as inspection of any testable backflow prevention device (reduced pressure principle, pressure vacuum breaker, spill proof vacuum breaker, and double check valve assembly), recordkeeping, and installation of an inspection tag. In addition, when a testable device is installed, tested, or removed from a community water system, the community water supplier and authority having jurisdiction must be notified.
- The new plumbing code establishes standards allowing collection and use of rainwater to supply water closets, urinals, trap primers for floor drains and floor sinks, industrial processes, water features, vehicle washing facilities, cooling tower makeup, and similar uses approved by the commissioner of DLI. This will create dual piping systems – potable water and nonpotable water. Plans must be approved, direct connections to potable water supplies are prohibited, piping must be marked and tested, and water quality standards must be met.

The new plumbing code, Minnesota Rules, chapter 4714 is available on the Revisor of Statutes website. It contains the language of the Minnesota rules and Minnesota amendments to the UPC, but only references the adopted UPC sections. It does not contain the text of the UPC. International Association of Plumbing and Mechanical Officials (IAPMO) has compiled a document which includes the full text of the Minnesota-adopted UPC language and the Minnesota amendments into a single document referred to as the “**2015 Minnesota Plumbing Code.**” A printed copy is available for purchase from IAPMO or the Minnesota Bookstore for \$98. A copy, divided into pdf sections, is available at the IAPMO website which is linked from the Plumbing Board/DLI website: [Plumbing](http://www.doli.state.mn.us/CCLD/Plumbing.asp) (www.doli.state.mn.us/CCLD/Plumbing.asp).

## Landfill Groundwater Areas of Concern

In 1994, the Minnesota Legislature passed the Landfill Cleanup Act. The law is an alternative to Superfund for cleaning up and maintaining closed landfills, and was the first program of its kind in the United States. The Minnesota Pollution Control Agency (MPCA) was given the responsibility to properly close, monitor, coordinate appropriate land use, and manage the risks to the public and environment of up to 112 closed mixed municipal solid waste landfills. There are currently 109 closed landfills in the Closed Landfill Program (CLP).

Groundwater contamination, landfill gas (primarily methane) migration, and surface water contamination can be serious issues at landfills. The CLP has developed landfill use plans that determine the appropriate use of the property and provide information about the property and adjoining properties that may be affected by methane gas migration, or groundwater contamination. The CLP has developed maps that show the location of gas probes, monitoring wells, groundwater plumes, the waste footprint, and the landfill property. The maps also identify “Methane Gas Areas of Concern” and “Groundwater Areas of Concern.”

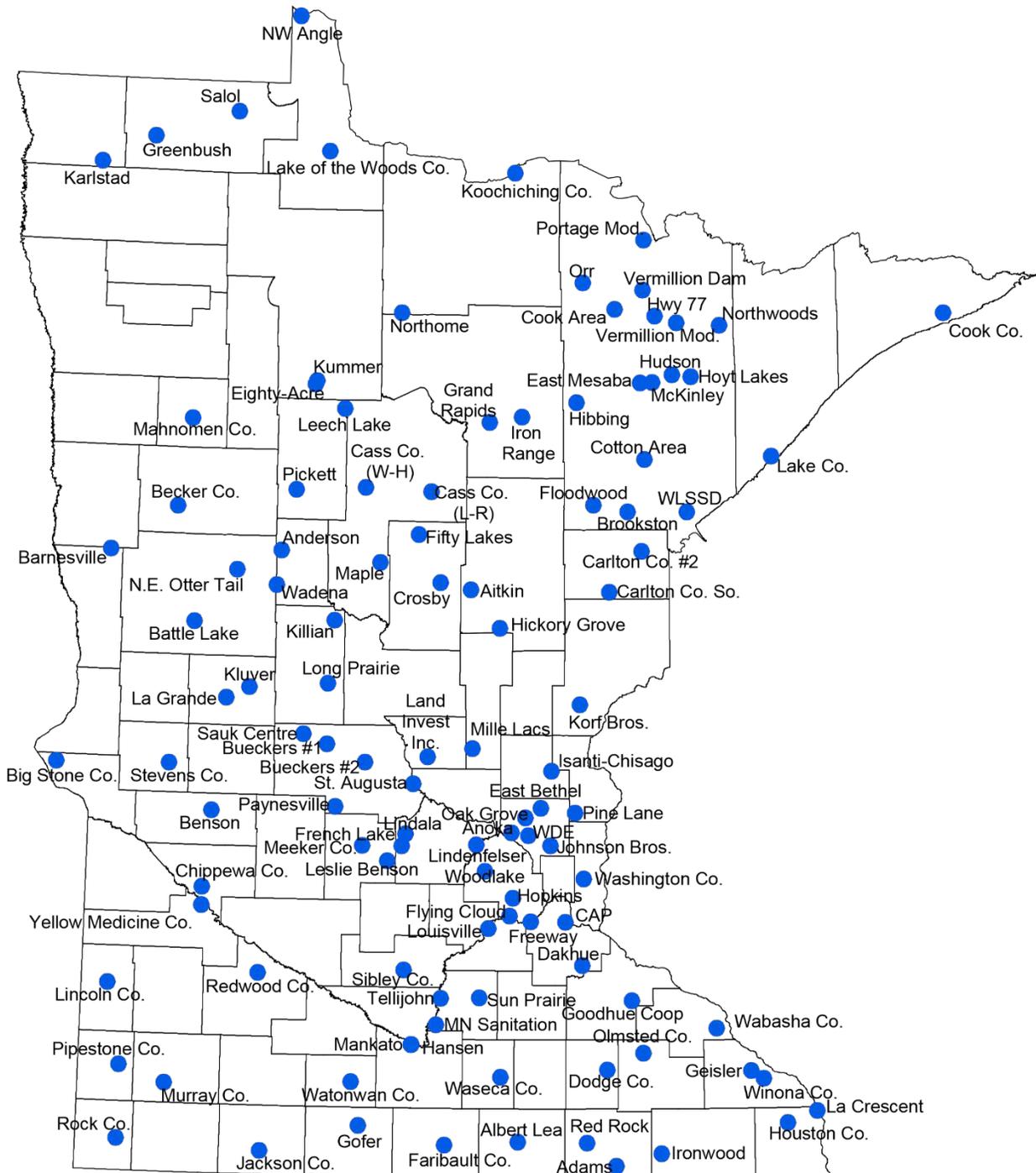
Groundwater Areas of Concern identify the estimated boundaries of actual and potential groundwater contamination. These Areas of Concern are defined as the area of land surrounding a landfill where the presence of activities that require the use of groundwater may be impacted or precluded by contamination from the landfill or may cause the groundwater flow direction to change, thereby impacting the user or others nearby. The Groundwater Area of Concern is used to inform the public about the current and potential risks to users of groundwater contaminated by the landfill. When a new well notification is received by the Minnesota Department of Health (MDH) for a new well that will be located near a landfill Groundwater Area of Concern, a notice is sent advising the well contractor of the landfill.

MDH well construction rules prohibit construction of a water-supply well within 300 feet of a landfill or dump – 600 feet for a sensitive well. The Areas of Concern identified by the MPCA may include properties greater than 300 (or 600 feet) from the landfill waste, often in the downgradient direction. Well construction at locations greater than 300 (or 600) feet from the landfill is not prohibited; however, contractors should proceed with caution, attempting to move the well site outside of the Area of Concern, and if not possible, contacting the MDH or MPCA and considering construction of a fully grouted well in an unaffected aquifer.

Information about the Closed Landfill Program can be found at the MPCA website: [Closed Landfill Program](https://www.pca.state.mn.us/waste/closed-landfill-program) (https://www.pca.state.mn.us/waste/closed-landfill-program).

Closed Landfill Program maps, showing the waste boundaries and groundwater Areas of Concern can be found at: [Landfill Cleanup Act Participants](http://mpca.maps.arcgis.com/home/webmap/viewer.html?webmap=5d911219744f41a38c275059279a7196) (http://mpca.maps.arcgis.com/home/webmap/viewer.html?webmap=5d911219744f41a38c275059279a7196).

# 112 Qualified Closed Landfill Program Sites



February 20, 2004

## Well Management Section Hires Kara Dennis

Kara Dennis was hired as a hydrologist with the Well Management Section on November 23, 2015, filling the vacancy created by Mark Hoffman's recent retirement. Prior to her arrival at the Minnesota Department of Health (MDH), Kara worked as a research assistant at Lamont-Doherty Earth Observatory at Columbia University in New York. Kara's responsibilities included curation, archiving, and analytical work on ocean sediment cores, corals, and deep-sea dredges, science communication and outreach, and leading educational tours. In her new role in the Well Management Section, Kara will be responsible for review of permit applications for monitoring wells, bored geothermal heat exchanger systems, and elevator borings. Kara will also be expanding the Well Management Section's education and outreach resources for private well owners. Kara has a Bachelor of Arts degree in Geology from Macalester College and a Master of Science degree in Earth Sciences from Syracuse University. In her free time, Kara enjoys oil painting, hiking, camping, and sailing.



Kara Dennis was hired as a hydrologist with the Well Management Section on November 23, 2015.

## Keeping the Insects and Spiders Out

There are approximately 91,000 described species of insects in the United States. Keeping them from getting into our water wells has been a concern since the beginning of the well program in Minnesota.



The original well rules allowed overlapping, ungasketed caps with open vents and “split top” sanitary well seals. They went a long way towards protecting wells from some hazards including larger rodents and bird droppings, but didn't do a good job in keeping out insects, reptiles, and small rodents like mice. The split sanitary well seal was better, but still could have a gap if the draw bolts were not tightened, or if, the electrical wires were not sealed, leaving plenty of room to allow insects entry into the well.

Today, the Well Code calls for an overlapping cap or cover with a compression gasket. Vents must be downturned and screened and electrical connections must be sealed.



If a sanitary well seal is used, it must have a one-piece top plate, compression gasket, and noncorrodible draw bolts. If the well or boring is housed within a building that meets the requirements in Minnesota Rules, part 4725.2175, a two-piece top plate, compression gasket, and noncorrodible bolts may be used.

The well rules do not require replacement of a “grandfathered” well seal or cap unless the seal or cap is defective; however, MDH recommends that old well caps be replaced with new, watertight, and vermin-proof well caps or approved sanitary well seals. It is a relatively inexpensive upgrade that could provide safety and peace of mind to well owners and save them money in the long run.

## Obituaries

**John Thomas Huffman, age 85**, formerly with Mueller Brothers Well Company, Huffman Well Drilling, and Hydro-Engineering, passed away on August 7, 2015.

[John Huffman](http://www.hantge.com/obituary/John-Huffman/Gaylord-MN/1534971) ([www.hantge.com/obituary/John-Huffman/Gaylord-MN/1534971](http://www.hantge.com/obituary/John-Huffman/Gaylord-MN/1534971))

**Bruce H. Gunderson, age 70**, Pelan Construction and Well Drilling, Karlstad, Minnesota, passed away on September 17, 2015. Bruce was former president of the Minnesota Water Well Association in 1979, and also worked as a well inspector for the Minnesota Department of Health in 2001-2002.

[Bruce H. Gunderson](http://www.helgesonfuneralhome.com/notices/Bruce-Gunderson) ([www.helgesonfuneralhome.com/notices/Bruce-Gunderson](http://www.helgesonfuneralhome.com/notices/Bruce-Gunderson))

**Jack F. Weinberger, age 73**, Weinberger Well Services Inc., Faribault, Minnesota, passed away on December 23, 2015.

[Jack F. Weinberger](http://www.boldtfuneralhome.com/obituaries/obituary-listings?obld=697636#/obituaryInfo) ([www.boldtfuneralhome.com/obituaries/obituary-listings?obld=697636#/obituaryInfo](http://www.boldtfuneralhome.com/obituaries/obituary-listings?obld=697636#/obituaryInfo))

**Lawrence F. Feldsien, Age 76**, from St. Paul, Minnesota. Formerly with Geotech and Braun Engineering Testing, passed away on January 28, 2016.

[Lawrence F. Feldsien](http://www.legacy.com/obituaries/twincities/obituary.aspx?pid=177572314) ([www.legacy.com/obituaries/twincities/obituary.aspx?pid=177572314](http://www.legacy.com/obituaries/twincities/obituary.aspx?pid=177572314))

**Stanley Colburn, Age 66**, Andover, Minnesota, passed away on February 3, 2016. Long-time cable-tool well driller for E.H. Renner and Sons, Inc. and McCarthy Well Co. [Stanley Colburn](http://www.startribune.com/obituaries/detail/121635/?fullname=stanley-william-colburn) ([www.startribune.com/obituaries/detail/121635/?fullname=stanley-william-colburn](http://www.startribune.com/obituaries/detail/121635/?fullname=stanley-william-colburn))

## Mary Jo Connolly

**Mary Jo (Tucker) Connolly**, former support staff specialist with the Minnesota Department of Health Well Management Section, passed away on January 19, 2016, at the age of 69. Mary Jo worked in the Well Management Section for 20 years before retiring in 2012.

Over the years, Mary Jo performed many duties for the Well Management Section including fee collection and processing, and serving as a liaison with well contractors and the general public on fees and paperwork requirements.

Mary Jo will be remembered for her excellent work and dedication to her job, her quick wit and wonderful sense of humor, her kindness, love of animals, and her great baking skills!



Mary Jo Connolly

[Mary Jo Connolly](http://www.legacy.com/obituaries/twincities/obituary.aspx?n=mary-jo-connolly-tucker&pid=177364760)

([www.legacy.com/obituaries/twincities/obituary.aspx?n=mary-jo-connolly-tucker&pid=177364760](http://www.legacy.com/obituaries/twincities/obituary.aspx?n=mary-jo-connolly-tucker&pid=177364760))

## Continuing Education Calendar

The Internet link to the Minnesota Department of Health (MDH), Well Management Section's, [Continuing Education Programs](http://www.health.state.mn.us/divs/eh/wells/lwcinfo/training.html) ([www.health.state.mn.us/divs/eh/wells/lwcinfo/training.html](http://www.health.state.mn.us/divs/eh/wells/lwcinfo/training.html)).

This calendar lists the upcoming continuing education courses that have been approved for renewal of certification for representatives of Minnesota licensed and registered well and boring contractors. The calendar also lists the number of credits available for each course. The calendar is updated monthly and, if you subscribe, you will be notified by email when this page changes (new classes added, changes to existing classes).

For additional information about any of these training opportunities, call the contact person listed for the program of interest. For general information about continuing education, more current CEU listings, or to request approval for other continuing education activities not listed, contact Norm Mofjeld, MDH, Well Management Section at 651-201-4593, or [norman.mofjeld@state.mn.us](mailto:norman.mofjeld@state.mn.us).

### MINNESOTA WELL MANAGEMENT NEWS

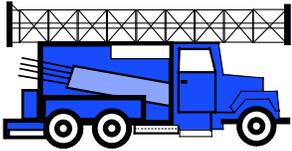
Published twice per year by the Well Management Section, Minnesota Department of Health  
[www.health.state.mn.us/divs/eh/wells](http://www.health.state.mn.us/divs/eh/wells)

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# Minnesota Well Management News

**MINNESOTA DEPARTMENT OF HEALTH  
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## Clean Water Fund Well Sealing Grants

The Minnesota Department of Health (MDH) has received over 1.2 million dollars from the Clean Water Fund (CWF) since July 2011 to assist well owners by paying up to half of the cost to permanently seal their unused wells.

Half of the money received from the CWF was passed through to the Minnesota Board of Water and Soil Resources (BWSR). BWSR has in turn awarded a total of 19 grants to local governments to assist private well owners to seal their unused wells. To date, 171 private wells have been properly sealed and about 170 more wells will be sealed by the end of 2016.

MDH has awarded the other half of the money received from the CWF to 29 different public water suppliers to assist them in sealing their unused, public water-supply wells. To date, 31 large capacity wells have been properly sealed. Eight additional wells will be sealed by June 2016.

Currently, MDH has \$113,000 available to reimburse up to 50 percent of the cost to seal unused public water-supply wells. There is a cap of \$50,000 per grantee with all well sealing work to be completed by June 2017.

Grant proposals will be accepted at MDH until the funding is expended. Application details are in the [Request for Proposal \(RFP\)](http://www.health.state.mn.us/divs/eh/cwl/pwrfpgrant.html) ([www.health.state.mn.us/divs/eh/cwl/pwrfpgrant.html](http://www.health.state.mn.us/divs/eh/cwl/pwrfpgrant.html)).