April 2014

Technical Bulletin

Wells Regulation – Test Hole & Dewatering Well Repairs & Alterations

This technical bulletin is one in a series of seventeen [1] on well issues created for a person who currently owns a test hole [2] or dewatering well [3]. The purpose of this technical bulletin is to:

- summarize the information found in the *Test Holes and Dewatering Wells – Requirements and Best Management Practices* manual published by the Ministry of the Environment, April 2014 **(hereon in referred to as the "Manual")** regarding repairs and alterations to test holes and dewatering wells, and
- present the repair and alteration requirements in Regulation 903 (Wells Regulation), as amended, made under the Ontario Water Resources Act for a test hole or dewatering well.

Well Owner's Obligations

Regulation 903 (Wells Regulation), as amended, made under the Ontario Water Resources Act requires that the well owner [4] maintain the well at all times after the completion of the well's structural stage (i.e., once it is capable of being used for the

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[1] A list of the seventeen technical bulletins is shown in the Additional Information Sources section near the end of this technical bulletin.

[2] A "test hole" means a well that, (a) is made to test or to obtain information in respect of ground water or an aquifer, and (b) is not used or intended for use as a source of water for agriculture or human consumption, subsection 1(1) of the Wells Regulation, e-laws: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_900903_e.htm

[3] A "dewatering well" means a well that is not used or intended for use as a source of water for agriculture or human consumption and that is made, (a) to lower or control the level of ground water in the area of the well, or (b) to remove materials that may be in the ground water, subsection 1(1) of the Wells Regulation, e-laws: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_900903_e.htm

[4] "Well owner" means the owner of land upon which a well is situated and includes a tenant or lessee of the land and a well purchaser, subsection 1(1) of the Wells Regulation, e-laws: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_900903_e.htm

purpose for which it was constructed)[5], in a way that prevents the entry of surface water and other foreign materials into the well. This may require repairs or other alterations to be done to the test hole or dewatering well.

Repair and Alteration Exemptions

Some construction activities performed on test holes and dewatering wells are exempt from the Wells Regulation requirements and the person doing these activities is exempt from the licensing requirements under the Ontario Water Resources Act (s. 36 to 50).

See the Wells Regulation and *Wells Regulation – Exempted Activities Performed on Wells, Including Test Holes & Dewatering Well* technical bulletin for further information.

Requirements for Repairs and Alterations on an Existing Well

A well is considered to be a "new well" at the time when the initial hole (test hole or dewatering well) is constructed. The obligation to meet new well requirements in the Wells Regulation is placed on the person constructing a well and applies during the construction of a new well (e.g., casing, annular space etc.).

Depending on the type and characteristics of the test hole or dewatering well constructed, the requirements for new well construction are provided in the Wells Regulation and outlined in the following technical bulletins:

- *Wells Regulation – Constructing New Uncased Test Holes & Dewatering Wells in Operation for Not Later Than 30 Days*
- *Wells Regulation – Constructing New Test Holes & Dewatering Wells in Operation for Not Later Than 180 Days*
- *Wells Regulation – Constructing New Test Holes & Dewatering Wells*
- *Wells Regulation – Constructing New Multi-level Monitoring Test Holes*
- *Wells Regulation – Completing the Structure of the New Test Hole or Dewatering Well*

[5] A well's structural stage is complete on the day on which the well is capable of being used for the purpose for which it was constructed but for, (a) compliance with section 15; (b) the installation of a pump; or (c) any alterations necessary to accommodate pumping, monitoring, sampling, testing or water treatment equipment, subsection 1(3) of the Wells Regulation, e-laws: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_900903_e.htm

The requirements for new test holes and dewatering wells will typically not apply to persons repairing or altering older or existing test holes and dewatering wells in terms of casing, annular space and well pits.

Although repairs and alterations to existing or older test holes or dewatering wells generally do not have to meet the construction requirements for new test holes or dewatering wells, it is recommended that such repairs follow all new construction requirements and best management practices [6] outlined in the Manual, where possible.

Some examples of when **new well construction requirements (e.g., casing) do not apply to older or existing wells** include:

- the completion of a minor alteration on a well,
- the replacement of a pump or associated pumping equipment such as a pitless adapter or pitless unit into a well,
- the extension of a well casing above the ground surface on a well,
- the installation of a new length of casing commonly called a casing sleeve or liner inside a well,
- the removal of a section of well casing from the top of a well while maintaining the required minimum casing height, and
- the use of equipment in the redevelopment or rehabilitation of a well, such as during hydraulic fracturing.

Minor Alteration

For clarification purposes, a "minor alteration" with respect to a well means,

(a) routine repair or maintenance,
(b) the installation of monitoring, sampling or testing equipment, other than equipment used to test the yield of the well or the aquifer,
(c) the installation of a pump in a test hole, or
(d) the installation of a well cap or watertight well cover.

[6] Best management practices are recommended actions or steps that exceed the minimum regulatory requirements to better protect the groundwater and the natural environment but are not enforceable.

Routine Repair or Routine Maintenance

A routine repair or routine maintenance on a well occurs when a person is following a sequence of actions regularly undertaken with respect to a well or is performing a regular procedure on a well.

An example of routine maintenance may be removing the well cap and verifying the condition of the casing and pump waterline annually.

The following are examples of activities that are **NOT considered to be routine repairs or maintenance**:

- Adding a well casing extension.
- Cutting casing.
- Adding a flush mounted well pit (vault).
- Deepening a well.
- Replacing a casing.
- Installing a well screen in a well.
- Pulling a pump and/or waterline from a water supply well and re-installing the equipment in the well.
- Changing a pitless adapter attached to well casing.
- Installing a pump in a dewatering well.
- Measuring water levels in a well with a water level meter while performing a constant rate, step pumping test in the same or another well.
- Using equipment in the redevelopment or rehabilitation of an existing well, such as during hydraulic fracturing.

Wells Regulation Requirements for Alterations Not Considered Minor Alterations

Unless exempt, the person performing an alteration to a test hole or dewatering well must meet as a minimum, maintaining field notes (section 12.1), covering the well (section 12.2), surface drainage (section 12.3), flowing well (section 14.7), well yield (sections 14.9 and 14.10), well tagging (section 14.11), venting (section 15.1), equipment connections (section 15.2), caps and covers (section 15.2), clean equipment (section 15.3), natural gas reporting (section 16), well record (section 16.3) and casing height maintenance [subsection 20(2)] requirements found in the Wells Regulation.

Wells Regulation Requirements for Minor Alterations

There are some requirements in the Wells Regulation that will apply also to a minor alteration such as removing a well cap. Unless exempt, the person performing a minor alteration to a test hole or dewatering well must meet, as a minimum, covering the well (section 12.2), surface drainage (section 12.3), flowing well (section 14.7), well tagging for broken or defaced well tags (section 14.11), venting (section 15.1), equipment connections (section 15.2), caps and covers (section 15.2), clean equipment (section 15.3), natural gas reporting (section 16), well record (section 16.3) and casing height maintenance [subsection 20(2)] requirements found in the Wells Regulation.

For more information see Chapter 14 of the Manual: *Test Hole & Dewatering Well Maintenance & Repair*.

Deepening an Existing Well

If an existing test hole or dewatering well is being deepened, the person constructing the well must:

- meet the casing requirements for a new test hole or dewatering well, with necessary modifications, but continued use of the casing in the existing well is permitted if the casing appears sound, and
- not construct a test hole or dewatering well by penetrating through the bottom of a bored or dug well by means of drilling or by the use of a jetted point or driven point.

Casing Height when Performing Work on or near a Test Hole or Dewatering Well

Persons, including well owners, should be aware of the following when performing any routine well maintenance, repair or alteration or when performing other work, such as landscaping or construction, around a well:

- Where the casing height of a test hole or dewatering well extends 40 cm (16″) or more above the ground surface, the top of the casing must not be reduced to a height of less than 40 cm (16″) above the ground surface.
- Where the casing height of an existing well extends less than 40 cm (16″) above the ground surface, the top of the casing must not be reduced to a height of less than the original casing height.

Exemptions

If a test hole or dewatering well is located in an area where vehicle traffic or pedestrians are likely to pass directly over the well, the requirement to maintain the casing height as stated above does not apply to the test hole or dewatering well when it is completed with a flush-mounted watertight commercially manufactured well cover. If used, all the **Wells Regulation** requirements for the use of this type of cover must be met. See the Wells Regulation and the *Wells Regulation – Completing the Structure of the New Test Hole or Dewatering Well* technical bulletin for further information.

An exemption to the minimum casing height requirement above the ground surface exists for a well that is made by the use of a jetted point or driven point. All requirements for the casing extent of a new driven or jetted point in the Wells Regulation must be met. See the Wells Regulation and the *Wells Regulation – Completing the Structure of the New Test Hole or Dewatering Well* technical bulletin for further information.

Installing Used Equipment during Well Repair or Alterations

The Wells Regulation allows for the installation of used pumps, pumping equipment, vents, covers, caps, casing, well screens, pitless adapters, pitless units and other equipment in existing test holes and dewatering wells.

All new or used equipment installed in or connected to a well must be clean and must not impair the quality of the groundwater or aquifer. Well owners must maintain all installed equipment to ensure that it does not impair the quality of the groundwater.

In addition to the requirement that equipment be clean and free of contamination, as a best management practice, anyone working on an existing test hole or dewatering well should:

- install new parts, devices and materials,
- install parts, devices and materials that are suitable for the particular type of environment and well,
- clean and sanitize the parts, devices, materials and well construction equipment with chlorinated water as recommended in the “Sanitary Practices” section in Chapter 10 of the Manual: *Test Hole & Dewatering Well Exemption & Recommended Activity: Disinfection*, and
- always ensure parts, devices and materials are installed to the manufacturer’s specifications.

The above best management practice regarding the use of chlorinated water should not be applied if the contamination in the groundwater being investigated is expected to react with the chlorine solution on the equipment unless the equipment is thoroughly rinsed prior to installation.

Well Tags and Well Records

In many circumstances:

- well records must be completed and submitted for construction work performed on a test hole or dewatering well, and
- well tags must be affixed to a test hole or dewatering well.

Well tags affixed to text holes and dewatering wells must only be removed in accordance with the Wells Regulation.

See the Wells Regulation and the *Wells Regulation – Records, Notification and Tagging for a Test Hole & Dewatering Well* technical bulletin for further information.

Well Construction Licences

A well technician that is retained to work on an existing test hole or dewatering well must hold the correct class of well technician licence and either hold a valid well contractor licence or work for a licensed well contractor, unless exempt under the Ontario Water Resources Act or the Wells Regulation. It is also crucial to retain properly qualified persons where electrical or plumbing work is necessary.

Some construction activities performed on test holes and dewatering wells are exempt from the Wells Regulation requirements and the person doing these activities is exempt from the licensing requirements under the Ontario Water Resources Act (s. 36 to 50). In other cases a registered professional who holds a valid well contractor licence or who works for a licensed well contractor is exempted from needing to obtain a well technician licence to perform certain activities.

For further information see the following technical bulletins:

- *Wells Regulation – Licensing (Class 5) for Individuals who Perform Tests on Wells,*
- *Wells Regulation – Test Hole and Dewatering Well Licensing, and*
- *Wells Regulation – Exempted Activities Performed on Wells, Including Test Holes & Dewatering Wells*

Safety Considerations when Repairing or Altering a Test Hole and Dewatering Well

When repairing or altering wells, well owners should be made aware of the many serious risks associated with wells including the possibility of explosive gases and electrocution. Since most well owners are not familiar with these potential hazards, licensed well technicians, knowledgeable with respect to these hazards, and working for licensed well contractors should always be hired to work on the well. As indicated in the "Well Construction Licence" section of this technical bulletin, some registered professionals working for licensed well contractors are exempt from the well technician licensing requirements for certain specified well construction activities. Any registered professionals working on test holes or dewatering wells should be knowledgeable about health and safety hazards.

Important precautionary actions to take include:

- making sure that the power supply to the pump has been shut off to minimize the risk of shock or electrocution when inspecting a well,
- safeguarding the well site any time the well cap or cover is removed to minimize hazards, and
- following all applicable safety plans for the site.

A person must not enter any confined space (e.g., non-ventilated areas including well pits, pump houses, and others defined in the O. Reg 632/05 under the *Occupational Health and Safety Act*), unless properly trained and equipped. Confined spaces present asphyxiation hazards and some wells produce naturally occurring gases that may be poisonous and/or explosive.

For further information see the "Safety Considerations When Working on Contaminated Sites," section in Chapter 6 of the Manual: *Constructing the Hole, Casing & Covering the Test Hole or Dewatering Well*.

It is important that anyone working on the rehabilitation of a test hole or dewatering well using chemical products:

- obtain and follow the guidelines set out in the Material Safety Data Sheet (MSDS) for any chemical product used in the rehabilitation. The MSDS will include the following:
    - properties of the material,
    - hazards associated with the material,
    - personal protective equipment (PPE) required when using the material, and

- first aid and medical attention information.

- make sure that all rehabilitation products are approved for the intended use and will not impair the quality of the groundwater
- check product labels to verify product contents, proper use and storage

Safety practices and requirements (e.g., Workplace Hazardous Materials Information System training), as regulated and advocated by the Ministry of Labour, must be followed.

Exempted Wells & Shallow Works

The Wells Regulation exempts certain types of wells, such as a pond or trench, from the Wells Regulation and from the sections on licensing of the Ontario Water Resources Act that pertain to wells [7].

A person who constructs, maintains or abandons a shallow works that meets the conditions set out in section 1.1 of the Wells Regulation:

- is exempt from the sections on licencing of the Ontario Water Resources Act that pertain to wells, [8] and
- need only meet the requirements found in section 1.1 of the Wells Regulation.

The shallow works exemption contained in section 1.1 of the Wells Regulation does not apply to a monitoring well that is constructed as part of a phase one or two environmental site assessment for a record of site condition [9].

See the *Wells Regulation – Understanding a Well, Test Hole and Dewatering Well* and *Wells Regulation – Shallows Works* technical bulletins for further information.

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[7] Sections 36 to 50 of the Ontario Water Resources Act, R.S.O. 1990, c. O. 40, e-laws: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90o40_e.htm

[8] Sections 36 to 50 of the Ontario Water Resources Act, R.S.O. 1990, c. O. 40, e-laws: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90o40_e.htm

[9] Ontario Regulation 153/04 as amended made under the Environmental Protection Act, R.S.O. 1990, c. E. 19, e-laws: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90e19_e.htm

Water Supply Wells

Certain licensing and construction requirements for water supply wells are different from the requirements for test holes and dewatering wells as defined by the Wells Regulation. For further information on the requirements for water supply wells see the *Water Supply Wells – Requirements and Best Management Practices* Manual, published by the Ministry of the Environment, December 2009 and the Wells Regulation.

Additional Information Sources

The seventeen technical bulletins on test holes and dewatering wells are:

- Wells Regulation – Understanding the Meaning of Well, Test Hole and Dewatering Well
- Wells Regulation – Shallow Works Test Holes & Dewatering Wells
- Wells Regulation – Exempted Activities Performed on Wells, Including Test Holes & Dewatering Wells
- Wells Regulation – Test Hole and Dewatering Well Licensing
- Wells Regulation – Licensing (Class 5) for Individuals who Perform Tests on Wells
- Wells Regulation – Site Considerations & Initial Planning for Test Holes & Dewatering Wells
- Wells Regulation – Constructing New Uncased Test Holes & Dewatering Wells in Operation for No Longer than 30 Days
- Wells Regulation – Constructing New Test Holes & Dewatering Wells in Operation for No Longer than 180 Days
- Wells Regulation – Constructing New Test Holes & Dewatering Wells
- Wells Regulation – Constructing New Multi-level Monitoring Test Holes
- Wells Regulation – Completing the Structure of the New Test Hole or Dewatering Well
- Wells Regulation – Flowing Test Holes & Dewatering Wells
- Wells Regulation – Test Hole & Dewatering Well Maintenance
- Wells Regulation – Well Record, Reporting & Tagging for a Test Hole & Dewatering Well
- Wells Regulation – Test Hole & Dewatering Well Repairs & Alterations
- Wells Regulation – Well Abandonment - When to Plug & Seal a Test Hole or Dewatering Well
- Well Regulation – Well Abandonment - How to Plug & Seal a Test Hole or Dewatering Well

These technical bulletins are available on Ontario.ca.

Further information on the maintenance of a test hole or dewatering well can be found in Chapter 14 of the Manual: *Test Hole and Dewatering Well Maintenance & Repair*.

A copy of the *Test Holes and Dewatering Wells – Requirements and Best Management Practices* Manual can be obtained on Ontario.ca.

A copy of the Ontario Water Resources Act, Wells Regulation and other regulations can be obtained from the e-Laws website at www.e-laws.gov.on.ca.

The publications are also available by calling the Publications Information Centre at 1-800-565-4923 or (416) 325-4000.

For further information about wells, contact the Wells Help Desk at 1-888-396-9355 (Well) or the nearest Ministry of the Environment office listed in the blue pages of the telephone directory.

Notice: This bulletin is being provided for information purposes only and is not intended, nor should it be construed as providing legal advice in any circumstances. The applicable environmental legislation, including the following, should be consulted.

- ***Ontario Water Resources Act, R.S.O. 1990, c. O. 40***
- ***R.R.O. 1990, Regulation 903 (Wells) as amended made under the Ontario Water Resources Act, R.S.O. 1990, c. O. 40***
- ***Ontario Regulation 153/04 as amended made under the Environmental Protection Act, R.S.O. 1990, c. E. 19***

Legislation and regulations change from time to time so it is essential that the most current versions be used.

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