



## Sources of Water for Hydraulic Fracturing Fluids

January 2014

Water is a critical component used in drilling and developing Ohio's oil and natural gas resources. At drilling sites, water is used for various reasons including support purposes such as controlling dust on access roads and cleaning equipment; operational purposes as a component in drilling fluid and cement; and for well stimulation (i.e. hydraulic fracturing).

In most cases, between 2 million and 6 million gallons of water are needed to complete a hydraulic fracturing operation on a Marcellus Shale or Utica Shale well. With the continued expansion of drilling and hydraulic fracturing in Ohio comes the increased need for reliable water supplies.

The following information will help oil and natural gas drilling companies to understand Ohio's regulations governing the withdrawal and use of water. Topics include sources of water that may be used for hydraulic fracturing, water rights, diversions of water across the Lake Erie–Ohio River watershed divide, water withdrawal regulations, and consumptive use of water.

### Sources of Water

Water used for hydraulic fracturing fluids may come from potable or non-potable sources. Non-potable water is not meant for human consumption and is not treated to drinking water standards. Under Ohio's regulations, an example of an unacceptable source of water is an unauthorized connection to a public water system water line (e.g. fire hydrant). Key requirements and general contact information for each potential water source are provided in the table on the following page.

### Water Rights in Ohio

In Ohio, land owners have the right to make reasonable use of ground water underlying their land or of the water in a lake or watercourse located on or flowing through or along their riparian land. This right to a reasonable use is a property right protected by Article 1 Section 19b of the Ohio Constitution. Withdrawals that unreasonably interfere with the withdrawals of other land owners using the same stream or aquifer may be subject to liability via civil litigation.

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Water Source	Key Requirements	Contact/ Regulatory Authority
Withdrawal from lakes, rivers, reservoirs (i.e. raw, untreated water)	Approval from source owner/manager; water withdrawal registration with Ohio Department of Natural Resources (ODNR); potential requirements from U.S. Army Corps of Engineers (USACE)	Owner/manager; ODNR; USACE
Approved connection to an existing public water system (PWS) (e.g. municipal water plant)	Backflow prevention including an air gap at the connection	PWS owner; Ohio EPA
Connection to an existing well (e.g. using water directly from an existing public or private well)	Approval of well owner; may require backflow prevention devices	Well owner; Ohio EPA (if PWS well)
Hauled water from a non-potable fresh water source	Water withdrawal registration, if applicable	ODNR
Hauled potable water from a PWS	PWS must have an approved conventional overhead fill station; water must be delivered by a water hauler registered with the local health district	Local health district (if no subsequent treatment after deliver); Ohio EPA (if additional treatment); PWS owner
Constructing and operating a new co-use well (e.g. drilling a new public or private well) for potable and non-potable purposes	Submit plans for drilling the well to Ohio EPA for review/approval (Ohio Administrative Code [OAC] 3745-9); comply with certified operator requirements (OAC 3745-7-02); file a well log with ODNR; if a private water system obtain a permit form the local health district and comply with well standards applicable to public water systems (OAC 3745-9) or private water systems construction rules (OAC 3721-28)	ODNR; Ohio EPA Division of Drinking and Ground Waters (DDAGW) (if public well) or local health district (if private well)
Constructing and operating a new well for non-potable use only	Comply with water well standards (OAC 3745-9) applicable to all well types; file a well log with ODNR	Ohio EPA DDAGW; ODNR
Other Sources (e.g. wastewater treatment plant effluent, ground water remediation well discharge)	Varies depending on source	ODNR; Ohio EPA Division of Materials and Waste Management (DMWM); Ohio EPA Division of Surface Water (DSW)

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## Water Withdrawal Requirements

Water utilized for hydraulic fracturing is considered to be consumptive use. As such, a number of reporting, permitting and other regulatory requirements apply:

### Diversion of Water from the Lake Erie Drainage Basin

The Great Lakes–St. Lawrence River Basin Water Resources Compact (Great Lakes Compact) is a binding agreement among the eight states that border the Great Lakes. The Great Lakes Compact, which has been enacted into Ohio law and carries the force of federal law, specifically prohibits any new or increased diversions of any amount of water out of the Lake Erie Basin. Therefore, no permits will be issued for the transfer of water out of the Lake Erie Basin for oil and gas operations, or other operations. The Lake Erie Basin includes all or part of 33 Ohio counties located north of the Lake Erie–Ohio River Basin drainage divide (See map, right). For more information, contact ODNR Division of Soil and Water Resources.



### Diversion of Water from the Ohio River Drainage Basin into a Different Drainage Basin

A facility must obtain an ODNR permit to divert more than an average of 100,000 gallons per day (gpd) (approximately 70 gallons per minute), over any 30-day period, out of the Ohio River Basin into a different drainage basin. “Diversion” means the transfer of water from the Ohio River Basin to a different drainage basin.

### Water Withdrawal Registration

A facility that has the *capacity* to withdraw at least 100,000 gpd, regardless of whether it is operating at capacity, must register with ODNR (Ohio Revised Code [ORC] 1521.16). Registration under this program is not a permit to withdraw water, nor does registration impose any restrictions on withdrawals.

### Consumptive Use of Water

A facility that has a new or increased consumptive use of more than 2 million gpd, averaged over any 30-day period (60 million gallons per month), must first obtain a permit from ODNR (ORC 1501.33). “Consumptive use” means a use of water resources, other than a diversion, that results in a loss of that water to the basin from which it is withdrawn and includes, but is not limited to, evaporation, evapotranspiration and incorporation of water into a product. For oil and gas operations, consumptive use includes the incorporation of water into drilling fluids and hydraulic fracturing fluids.

### Prior Notice and Consultation Requirements of the Compact

In December 2013 and thereafter, the Great Lakes Compact requires all Lake Erie Basin proposals for new or increased consumptive uses of 5 million gpd or more, averaged in any 90-day period (450 million gallons or more in a three month period), to be submitted to the eight Great Lakes states and the Canadian provinces of Ontario and Quebec for review and comment.

## U.S. Army Corps of Engineers

For more information on USACE regulations, please refer to Public Notice No. LRH-2011-5 “USACE Regulatory in Oil and Gas Activities” found at: [www.lrh.usace.army.mil/permits/publicnotices/oh/](http://www.lrh.usace.army.mil/permits/publicnotices/oh/).

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## Additional Information

### **Ohio EPA**

P.O. Box 1049, Columbus, Ohio 43216-1049

Division of Drinking and Ground Waters (DDAGW)  
(614) 644-2752  
***ddagw@epa.ohio.gov***

Division of Materials and Waste Management (DMWM)  
(614) 644-2621  
***Jeff.Mayhugh@epa.ohio.gov***

Division of Surface Water (DSW)  
(614) 644-2001  
***dsw.webmail@epa.ohio.gov***

### **ODNR, Division of Soil and Water Resources**

2045 Morse Road, Building B-3, Columbus, Ohio 43229  
(614) 265-6745  
***mdswc@dnr.state.oh.us***

### **ODH, Bureau of Environmental Health - Private Water Systems Program**

246 North High Street, Columbus, OH 43215  
(614) 644-7558  
***BEH@odh.ohio.gov***

### **U.S. Army Corps of Engineers, Huntington District**

502 Eighth Street, Huntington, West Virginia 25701-2070  
(304) 399-5610  
***www.lrh.usace.army.mil/permits/***  
General Contact Information/District Map: ***www.lrd.usace.army.mil/contactus/***