

# Drinking Water Source Protection Update

## September 2010

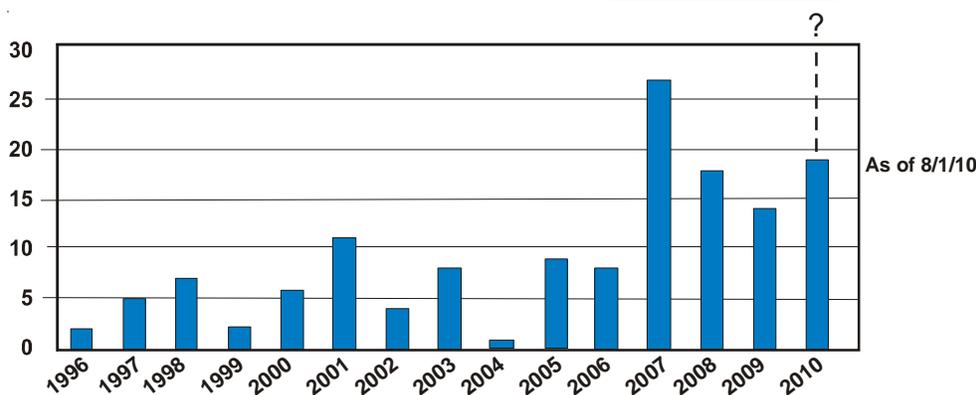
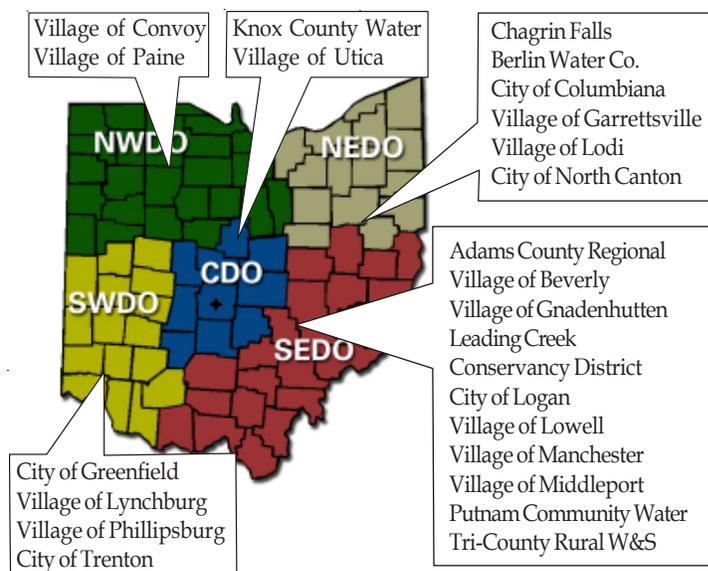
### Source Water Protection Plan Submittals Increasing

Year 2010 is proving to be a remarkable one for completions of local source water protection plans. Within the first three months alone, Ohio EPA's Source Water Protection program received and endorsed 13 protection plans. Listed below in the graphic are the 24 systems that completed protection plans during the state fiscal year (July 1, 2009 to June 30, 2010).

In April 1997, the city of Lancaster became the first municipality in Ohio to submit a source water protection plan for endorsement. Since then, it has been joined by 140 more municipalities. Collectively, they provide drinking water to more than 3.7 million Ohioans.

Source water protection plans typically are completed by a local volunteer team, which reduces overall costs. Ohio's Source Water Protection program has simplified the process by providing a protection plan template and some sample plans on its website. Ohio EPA staff and two Ohio Rural Water Association staff members offer on-site, technical assistance developing and writing the plan. Public water system operators may earn continuing education credits for this effort. In addition, a completed protection plan provides higher priority for Ohio EPA low-interest loans.

The chart below shows that, although the number of protection plans endorsed each calendar year has oscillated, there is a steady upward trend. For more information about developing a local protection plan, contact your Ohio EPA district office and ask to speak to the source water protection staff.



#### Inside This Issue

- Source Water Protection Plan Submittals Increasing
- Technical Assistance and Outreach
- 2011 SWAP Survey
- Source Water Protection and Ohio's Epidemic of Algal Toxins
- Ground Water Impacts from Salt Piles
- Revised Methodology for Delineating Protection Areas in Karst
- New Guidance on Geothermal Heat Pumps

## Technical Assistance and Outreach

District Source Water Protection (SWAP) staff members continue to assist with assessing new systems as they come online. From July 2009 to June 2010, SWAP staff completed and issued 104 source water assessment reports. Forty of these were revisions of earlier SWAP reports, because of new wells, changed pumping rates or other kinds of changes. Five assessments were reevaluated because the wells were located in shallow karst (the SWAP program recently improved its methodology for delineating karst – see page 4). Additional outreach activities are summarized below.

### Protection Plan Workshops

SWAP program staff members completed multi-session source water protection planning workshops for the village of Wilmot, the city of Logan, Adams County Regional Water, the Medina County Southern Water District, the city of Minerva, Ohio American Water Company (14 small systems), the city of Akron, the city of Alliance, the village of Gnadenuhnten, Le-Ax Water District, the Leading Creek Conservancy District, the city of Ashtabula, the village of Tuscarawas and the village of Orwell. A workshop series was initiated with the village of Caldwell, a surface water system. In addition to outreach at workshops, SWAP program staff met at least once with 26 additional public water systems, where they provided information and guidance about developing or implementing a local source water protection plan.

### Certificates of Recognition

Ohio EPA staff provided certificates of recognition to the 24 municipal systems that completed an endorsable source water protection plan, as well as to the 95 nonmunicipal systems that completed a source water protection checklist.



On May 18, 2010, Ohio EPA presented certificates of recognition to four public water systems in Washington County.

### Technical Assistance and Reviews

Central office staff responded to 496 technical assistance requests for site-specific maps showing the locations of source water protection areas near regulated facilities or proposed mining areas. The average response time was one working day. Central office staff completed review of 57 water quality certifications for projects impacting wetlands, lakes or streams and provided input on potential drinking water impacts for 58 coal or industrial minerals mining applications. District staff reviewed six SWAP area redelineations completed by consultants for client public water systems.

### SWAP Web Page

Since September 1, 2009, the source water protection website has been accessed 3,413 times. The documents most frequently downloaded are the 2009 SWAP newsletter, the ground water monitoring guidance for SWAP areas, the SWAP fact sheet and the Versailles protection plan (a model plan).

### SWAP Secure Web Page and County Maps

During fiscal year 2010, 153 new users registered for the secure source water protection web page, bringing the total to 557 users. Registrants use an assigned password to view the SWAP reports completed for all Ohio systems. Also, new 24x36-inch maps are now available on the secure website for all 88 Ohio counties. These maps are PDF files showing the SWAP protection areas and wells in a given county. Finally, GIS shapefiles for all public water wells and source water protection areas are available at this site.



### SWEET Outreach

During fiscal year 2010, 54 SWEET teams were active in 58 counties, providing information about ground water and source water protection to local protection planning teams and other interested parties. Statewide, 41 teams participated in 169 events reaching 18,428 people. Since the inception of the program in October 2005, SWEETs have reached out to almost 65,000 people. (<http://wwwapp.epa.ohio.gov/ddagw/SWEET>)

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## 2011 SWAP Survey

In spring 2011, the Source Water Protection program will issue another “SWAP Survey” to Ohio’s 600-plus municipal public water system operators. Like the baseline survey issued in 2007, this survey will collect information about each municipality’s source water protection activities. The results will be reported in the 2011 SWAP newsletter.

# Source Water Protection and Ohio's Algal Toxin Outbreak

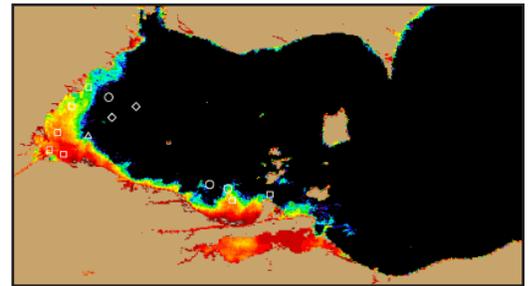
This summer, Ohio EPA has been inundated with reports of lakes affected by harmful algal blooms (HABs). These HABs are composed of blue-green algae, which is actually bacteria (cyanobacteria). The bloom that forms is a result of overproduction of the bacteria. The bacteria can release toxins that can cause anything from rashes to neurological and liver impairment.

For most of the season, Grand Lake St. Marys (GLSM) has been choked with algae. Microcystin, a toxin produced by several types of blue-green algae, including *Microcystis* and *Planktothrix*, was first detected in 2007 as part of the National Lakes Sampling program. The levels were so high in 2009 that signs were posted advising people to avoid contact with the water. In 2010, the algae returned worse than ever, forming a blue and green scum with a foul odor. Dead fish washed up on the shoreline. Human illnesses and dog deaths potentially related to the algal toxins were reported. For those whose livelihoods depend on the lake and its tourism, the environmental upheaval is also an economic calamity.

Unfortunately, this year GLSM was not alone. By the end of August, cyanobacteria had been identified in at least 17 water bodies around Ohio, some of which are also sources of drinking water. For example, GLSM provides drinking water for the city of Celina and Lake Erie supplies water to numerous cities, including Toledo and Sandusky. Fortunately, testing indicates that treated water from these water supplies remains safe to drink.

Scientists are trying to determine why these types of algae seem more pervasive than before; what removes them; and how much toxin a person can safely swim in or ingest. Two things seem clear: high amounts of phosphorus in water bodies encourage the development of algae, and conservation practices that prevent fertilizers, manure and other sources of nutrients from entering water bodies are among the best ways to prevent algae blooms. These are also the same practices that the Ohio Source Water Protection program promotes for public water systems providing drinking water from a surface water body.

For more information about HABs, go to [www.epa.ohio.gov/dsw/HAB.aspx](http://www.epa.ohio.gov/dsw/HAB.aspx).



MERIS satellite imagery of Lake Erie Western Basin on July 31, 2010. Color intensity indicates likelihood of *Microcystis*, with red being the highest concentrations. ([www.glerl.noaa.gov/res/Centers/HABS/lake\\_erie\\_hab/bulletin\\_2010-011.pdf](http://www.glerl.noaa.gov/res/Centers/HABS/lake_erie_hab/bulletin_2010-011.pdf))

## Ground Water Impacts from Salt Piles

Road salt is critical to keeping roadways safe during Ohio winters, but if improperly stored it can cause ground water impacts. In August 2010, residents of the village of Camden began complaining about the taste of their public drinking water. During the subsequent Ohio EPA inspection, a drain line was discovered which local officials indicated originated from a salt storage area and discharged in close proximity to Camden's wells in a dry creek. Effluent from this pipe contained extremely high concentrations of total dissolved solids (TDS), chloride and sodium. Also, cyanide – used in the anti-caking compound in salt – was detected at levels more than three times the drinking water standard. (So far, no cyanide has been detected in the village's treated water but TDS and chloride are elevated above documented background levels in ground water at the wellfield).

Approximately 2,500 feet north of Camden's wellfield are two large commercial salt piles, located within the protection area of Camden's wells. The salt pile operator had been informed of the threat to the drinking water by SWAP staff at Ohio EPA's Southwest District Office when the facilities were sited two years ago, but no action was taken at that time.

Over the last year, Ohio EPA has received complaints about three other salt piles throughout the state. GIS analysis of the source water protection database indicates salt piles are located within 62 of Ohio's source water protection areas. Half of these areas are characterized as 'highly susceptible' to contamination. The likelihood of ground water impacts can be minimized by storing salt beneath a roof and on an impermeable surface with containment berms.





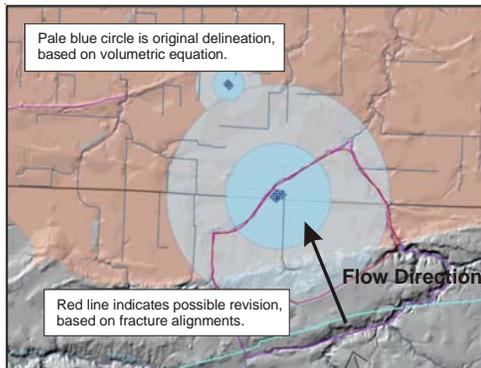
Looking Ahead...

## Revised Methodology for Delineating Protection Areas in Karst

For the last several years, Ohio's Source Water Protection program has researched improved methods of delineating protection areas in 'karst' (areas where highly fractured carbonate rocks lie close to the ground surface). The standard delineation methods, including volumetric calculations and ground water flow modeling, cannot simulate the rapid flow of water through the large fractures and cavernous spaces typical of karst. This information requires measurement of actual ground water flow rates, which is difficult and very time-intensive.

From 2007 to 2009, SWAP staff conducted four successful dye trace studies in karst areas in Clark, Wyandot and Sandusky counties to help determine how fast the ground water was flowing. The measured flow rates were up to several miles per day, and proved that the original circular protection areas for public water systems in karst areas

were inadequate. They were often too small in the up-gradient direction and overly protective in the down-gradient direction.

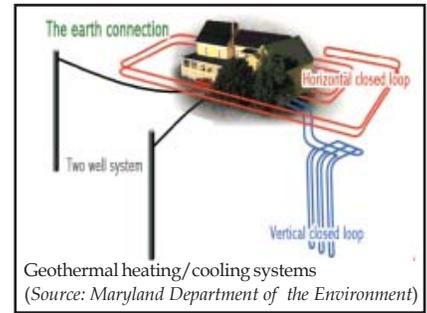


The revised delineation approach is

based on geologic and watershed mapping. The protection area ideally extends to a ground water divide or geologic boundary, but if these are not present within a reasonable distance (as is the case in much of uniform flat-lying northwest Ohio) the area extends to a stream that follows a cross-cutting fracture. If sinkholes are present nearby, the protection area is delineated to include the surface water drainage area to those sinkholes. Over the next year, Ohio EPA will use this methodology to redelineate the protection areas for municipal systems in Ohio's karst terrain. More details on the revised methodology are available online in the *Drinking Water Source Protection Area Delineation Guidance Manual (Revised 2010)*: [www.epa.ohio.gov/portals/28/documents/swap/swap\\_delin\\_guidance.pdf](http://www.epa.ohio.gov/portals/28/documents/swap/swap_delin_guidance.pdf)

## New Guidance on Geothermal Heating/Cooling Systems

Federal tax credits for energy efficiency have created renewed interest in ground water (low temperature geothermal) heat pump systems. Ohio EPA and other state agencies have heard concerns about the potential for these



systems to impact Ohio's ground water resources. For example, conduction fluid may potentially leak into ground water and deficient wells may be installed by individuals without a license to install wells in Ohio. Some stakeholders question whether geothermal heating/cooling systems should be permitted within source water protection areas for ground water systems.

The State Coordinating Committee for Ground Water, which helps coordinate inter-agency implementation of ground water protection and management programs, formed a workgroup in February 2010 to address these concerns. The workgroup is documenting existing Ohio rules and regulations that apply to geothermal heating/cooling systems. It is currently developing guidance for government agencies to use in siting, installation, operation and decommissioning of geothermal heating/cooling systems. Members of the workgroup represent state and local government, installers and well drillers. The workgroup's goal is to complete a guidance by the end of 2010.



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