

# sourcewater protection



## The Water Resource Protection and Conservation Toolkit

This is one of a series of 12 fact sheets developed by the Northwestern Indiana Regional Planning Commission with funding from the Joyce Foundation for the Water Resources Protection and Conservation Toolkit. The toolkit provides background on, and methods to protect and conserve local water resources. These tools are intended to help citizens and local officials to manage and protect water resources for future generations.

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## What Sourcewater Protection Tools Can Local Officials Use to Protect Water Sources?

**P**rotecting sourcewater means protecting your drinking water supplies.

Sourcewater is water collected from streams, rivers, lakes, or groundwater for public drinking wells, private water wells, or industrial, commercial or agricultural uses.

Sourcewater protection is designed to protect drinking water sources from both the surface and ground.

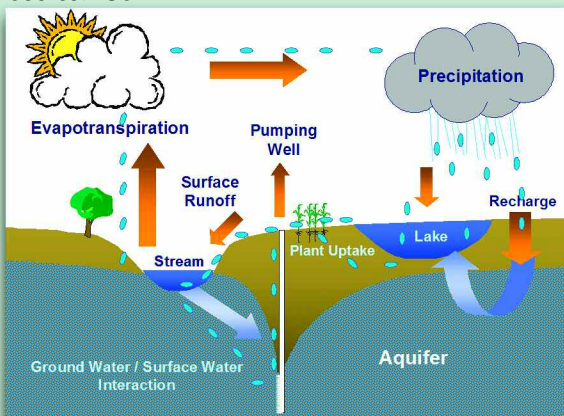
Sourcewater protection plans are required by law. Federal laws focus on specific sources of water and the impacts from pollutants and land use changes.

A sourcewater protection area is established to keep contamination sources that may contribute pollution to the water supply at a safe distance. Inadequate sourcewater protection plans and/or enforcement can lead to:

- Poor water quality
- Increased threats to public health
- Declines in groundwater quantity
- Higher water treatment costs
- Lower property values



Source: USEPA



## Water Resources and The Natural Water (or Hydrologic) Cycle

Water resources can be significantly affected by development activities. Water resources move through the water cycle, sometimes called the hydrologic cycle. The water cycle is the continuous movement of water from ocean, lakes, rivers, and other water bodies to air and land then back to these water bodies through rain and snow in a cyclic pattern as water is used and re-used. Some water infiltrates (or seeps into) the ground or evaporates back into the atmosphere.



## What are the Threats to Sourcewater?

- **Contamination from bacteria and viruses** that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- **Contamination from materials such as salts and metals**, that are natural in the environment or are picked up by rain runoff going into streams, lakes, groundwater, and rivers. They can come from wastewater discharged from businesses, industry or home septic systems, oil production, mining, or farming.
- **Pesticides and herbicides**, which may come from a variety of sources such as agriculture, stormwater runoff, and uses by homeowners.
- **Organic chemical contaminants**, by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
- **Radioactive contaminants**, which can be naturally occurring or be the result of oil and gas production and mining activities.
- **Water Quantity.** Overuse of ground and surface waters decreases baseflow on streams below that are necessary to sustain other uses of the waterbody including support of the environment.

## What are the Benefits of Sourcewater Protection?

Integrated sourcewater protection plans have a number of benefits, including:

- Reduces costs of complying with state and federal drinking water regulations.
- Reduces water treatment costs.
- Maintains the value of a water supply.
- Maintains real estate values in areas served by protected water supplies.
- Prevents the loss of existing or potential tax revenues and jobs when businesses refuse to locate or remain near places with known or suspected problems.
- Safeguards local tourism and recreation revenues.
- Protects plant and animal life.

Studies have shown that the cost of dealing with contaminated groundwater supplies for the communities studied was, on average, 30 to 40 times more (and up to 200 times greater) than preventing their contamination. This is for both reduced treatment costs and the cost savings associated with replacing a contaminated water supply.

## Sourcewater Protection Planning

Consider the Source: A Pocket Guide to Protecting Your Drinking Water, USEPA

[www.epa.gov/safewater/protect/pdfs/swppocket.pdf](http://www.epa.gov/safewater/protect/pdfs/swppocket.pdf)

Forming the Wellhead Protection Planning Team, Purdue University, Planning with Power.

[www.ecn.purdue.edu/safewater/wellhead/team1.htm](http://www.ecn.purdue.edu/safewater/wellhead/team1.htm)

How to Get Started: Protecting Your Community from Polluted Runoff,

Purdue University, Planning with Power

[www.planningwithpower.org/pubs/id\\_259.pdf](http://www.planningwithpower.org/pubs/id_259.pdf).

Safewater for the Future, Purdue University Wellhead Protection Resources,

[www.ecn.purdue.edu/SafeWater/wellhead/index.htm](http://www.ecn.purdue.edu/SafeWater/wellhead/index.htm)

State of Illinois Wellhead Protection Program,

[www.epa.state.il.us/water/groundwater/wellhead-protection.html](http://www.epa.state.il.us/water/groundwater/wellhead-protection.html)

State of Indiana Wellhead Protection Program,

[www.in.gov/idem/water/dwb/whpp/index.html](http://www.in.gov/idem/water/dwb/whpp/index.html)

State of Michigan Wellhead Protection Program,

[www.michigan.gov/deq/0,1607,7-135-3313\\_3675\\_3695---,00.html](http://www.michigan.gov/deq/0,1607,7-135-3313_3675_3695---,00.html)

State of Wisconsin Wellhead Protection Program,

[www.dnr.wi.gov/org/water/dwg/gw/wellhead.htm](http://www.dnr.wi.gov/org/water/dwg/gw/wellhead.htm)

or

[www.dnr.wi.gov/org/water/dwg/gw/whp/WHP\\_ORDA.pdf](http://www.dnr.wi.gov/org/water/dwg/gw/whp/WHP_ORDA.pdf) for model ordinances

USEPA Sourcewater Protection Home Page,

[www.epa.gov/ogwdw/protect/sitemap.html](http://www.epa.gov/ogwdw/protect/sitemap.html)

## How Are Sourcewater Protection Plans Created or Updated?

**USEPA has developed a six-step process for developing sourcewater protection plans:**

1. **MAP OUT** the Source Water Protection Area (SWPA)
2. **INVENTORY** known and potential sources of pollution.
3. **DETERMINE THE POTENTIAL THREATS** to the public water supply from the sources of pollution.
4. **NOTIFY AND INVOLVE THE PUBLIC** about pollution threats and what they mean to their public water supply system.
5. **PREVENT, REDUCE, OR ELIMINATE THREATS** to the drinking water supply.
6. **DEVELOP CONTINGENCY PLANNING STRATEGIES** to deal with the possibility of service interruption or the water supply becoming polluted.



## What Goes Into Effective Sourcewater Protection Ordinances?

Local officials must look at all of their ordinances to see how they protect sources of water. Stormwater and zoning ordinances and stormwater and land use plans can be used to ensure that polluted runoff does not become excessive as the area of paved surfaces increases and to provide groundwater replenishment.

In addition to general surface and groundwater protection ordinances, local governments also can enact the following types of ordinances.



Stream Buffer; Source: USEPA

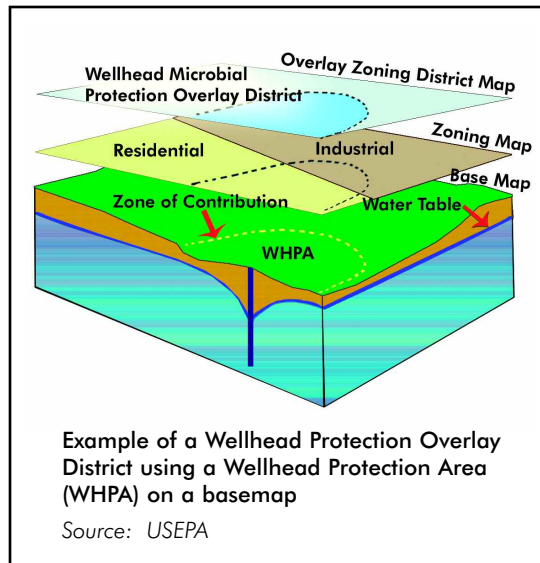
### OVERLAY ZONES.

The main goal of a Groundwater Protection Overlay Zone is to protect a community's or region's groundwater from pollution and make sure that the groundwater is replenished. Protection of an aquifer can be done by:

- Restricting land use.
- Limiting surfaces that do not drain (like concrete).
- Placing strict design guidelines for septic systems.
- Not allowing development to become too dense.
- Protecting and planting natural vegetation.
- Clustering new development to leave critical groundwater protection areas undeveloped.

### TRANSFER OF DEVELOPMENT RIGHTS.

Transfer of development rights protects land by "trading" the "rights to develop" a protected area for another where there are not as many restrictions.



### BUFFERS.

Buffers are areas of open vegetated land adjacent to drainageways, stormwater facilities, lakes, ponds, streams, wetlands, or other surface waters. Buffers help minimize development effects by:

- Slowing the rate of stormwater flow by encouraging infiltration.
- Using appropriate plants to absorb nutrients before they enter waterways.
- Controlling sediment by filtering and assimilating stormwater runoff.
- Minimizing erosion of stream, lake, pond or wetland shorelines.
- Creating wildlife corridors.

## Example Sourcewater Protection Ordinances

### Sourcewater Protection Ordinances

- Groundwater Recharge Protection Ordinance - Fayette County, Georgia, [www.admin.co.fayette.ga.us/engineering/dev\\_reg\\_engine.htm](http://www.admin.co.fayette.ga.us/engineering/dev_reg_engine.htm)
- Model Surface Water Protection Ordinance, [www.epa.gov/owow/nps/ordinance/mol7.htm](http://www.epa.gov/owow/nps/ordinance/mol7.htm)
- Model Groundwater Protection Ordinance, [www.epa.gov/owow/nps/ordinance/mol7.htm](http://www.epa.gov/owow/nps/ordinance/mol7.htm)
- Weston, Wisconsin Wellhead Protection District Ordinance, [www.epa.gov/owow/nps/ordinance/osm7.htm](http://www.epa.gov/owow/nps/ordinance/osm7.htm)

### Overlay Zones

- Salt Lake City, Utah Groundwater Source Protection Overlay District County of York; Virginia Watershed Management and Protection Area Overlay District; and Buffalo, Minnesota Shoreland Management Overlay District; [www.epa.gov/owow/nps/ordinance/osm7.htm](http://www.epa.gov/owow/nps/ordinance/osm7.htm)

### Transfer of Development Rights Ordinances to Protect Special Lands

- Transfer of Development Rights Ordinance, Sarasota, FL, [www.epa.gov/nps/ordinance/documents/E3-Sarasota.pdf](http://www.epa.gov/nps/ordinance/documents/E3-Sarasota.pdf)

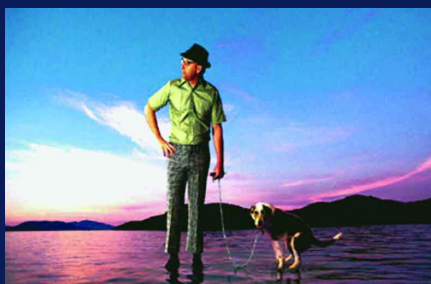
### Buffers

- Aquatic Buffer Model Ordinance, [www.epa.gov/owow/nps/ordinance/mol1.htm](http://www.epa.gov/owow/nps/ordinance/mol1.htm)
- Protecting Stream and River Corridors: Creating Effective Local Riparian Buffer Ordinances, [www.cviog.uga.edu/pprs/paper-streams.pdf](http://www.cviog.uga.edu/pprs/paper-streams.pdf)

For more information, please contact: Northwestern Indiana Regional Planning Commission  
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Source USEPA



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## What Information Is Available to Educate Citizens on How They Can Prevent Pollution?

Preventing pollution from everyday activities performed by people, businesses, and governments is an important part of protecting sources of drinking water. While people do not ordinarily think of these activities as contaminating their drinking water, activities such as car washing, fertilizing the lawn, and not picking up after a pet, can contribute to contamination of sourcewater.

EPA has published a series of fact sheets on best management practices (BMP) measures for activities that are likely to impact the sources of water used as drinking water. These fact sheets also are used as part of a sourcewater protection training course ([www.epa.gov/safewater/dwa/electronic.html](http://www.epa.gov/safewater/dwa/electronic.html)).

## EPA Pollution Prevention Fact Sheets

### Above Ground Storage Tanks

[www.epa.gov/safewater/protect/pdfs/ast.pdf](http://www.epa.gov/safewater/protect/pdfs/ast.pdf)

### Agricultural Fertilizer

[www.epa.gov/safewater/protect/pdfs/fertilizer.pdf](http://www.epa.gov/safewater/protect/pdfs/fertilizer.pdf)

### Airport Deicing

[www.epa.gov/safewater/protect/pdfs/airportfs.pdf](http://www.epa.gov/safewater/protect/pdfs/airportfs.pdf)

### Highway Deicing

[www.epa.gov/safewater/protect/pdfs/highwaydeicing.pdf](http://www.epa.gov/safewater/protect/pdfs/highwaydeicing.pdf)

### Large-Scale Application of Pesticides

[www.epa.gov/safewater/protect/pdfs/lspesticides.pdf](http://www.epa.gov/safewater/protect/pdfs/lspesticides.pdf)

### Livestock, Poultry, and Horse Waste

[www.epa.gov/safewater/protect/pdfs/livestock.pdf](http://www.epa.gov/safewater/protect/pdfs/livestock.pdf)

### Managing Small Quantity Chemical Use to Prevent Contamination of Drinking Water

[www.epa.gov/safewater/protect/pdfs/chemical\\_use\\_fact\\_sheet.pdf](http://www.epa.gov/safewater/protect/pdfs/chemical_use_fact_sheet.pdf)

### Pet and Wildlife Waste,

[www.epa.gov/safewater/protect/pdfs/petwaste.pdf](http://www.epa.gov/safewater/protect/pdfs/petwaste.pdf)

### Sanitary Sewer Overflows and Combined Sewer Overflows

[www.epa.gov/safewater/protect/pdfs/ssocso.pdf](http://www.epa.gov/safewater/protect/pdfs/ssocso.pdf)

### Septic Systems

[www.epa.gov/safewater/protect/pdfs/septic.pdf](http://www.epa.gov/safewater/protect/pdfs/septic.pdf)

### Small-Scale Application of Pesticides

[www.epa.gov/safewater/protect/pdfs/sspesticides.pdf](http://www.epa.gov/safewater/protect/pdfs/sspesticides.pdf)

### Storm Water Runoff,

[www.epa.gov/safewater/protect/pdfs/stormwater.pdf](http://www.epa.gov/safewater/protect/pdfs/stormwater.pdf)

### Turfgrass and Garden Fertilizer Application

[www.epa.gov/safewater/protect/pdfs/turfgrass.pdf](http://www.epa.gov/safewater/protect/pdfs/turfgrass.pdf)

### Underground Storage Tanks

[www.epa.gov/safewater/protect/pdfs/ust.pdf](http://www.epa.gov/safewater/protect/pdfs/ust.pdf)

### Vehicle Washing

[www.epa.gov/safewater/protect/pdfs/vehicle.pdf](http://www.epa.gov/safewater/protect/pdfs/vehicle.pdf)