



Wellhead



Protection *for safe drinking water in Indiana*

Choosing a Consultant to Delineate the Wellhead Protection Area

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Safe drinking water is vital to our communities, to our economy, and to our health. The best way to ensure a safe water supply, now and for the future, is to protect the area nearest a community public supply well from potential hazards.

This publication offers some guidelines for water supply operators and wellhead protection planning teams who must hire a qualified ground water scientist to delineate a wellhead protection area.

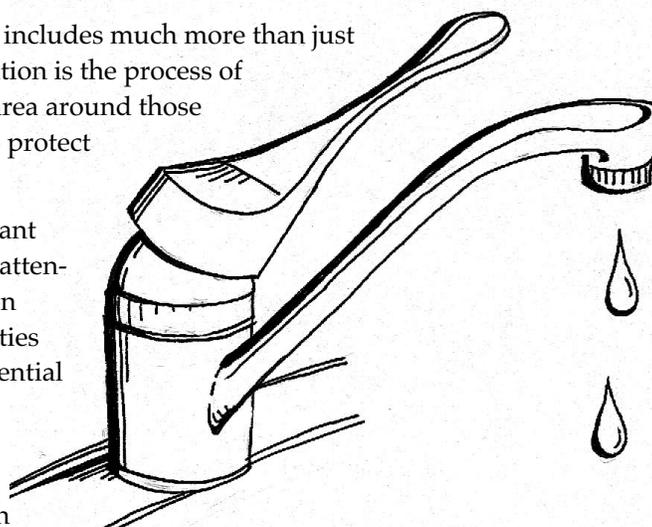
Wellhead Protection Planning Overview

- Local planning team
- Delineation of the wellhead protection area
- Identification of potential sources of contamination
- Management of the wellhead protection area
- Contingency plan
- Public participation, education, and outreach

What Is a Wellhead Protection Area?

The wellhead protection area includes much more than just the wells themselves. Delineation is the process of identifying how much of an area around those wells needs to be managed to protect the water supply.

The delineated area is important because it serves to focus the attention of the wellhead protection planning team on what activities within that area might be potential contributors to ground water pollution. "Potential" is the important word here, in that Indiana's Wellhead Protection Rule (327 IAC 8-4.1) emphasizes prevention rather than remediation. Once activities are identified, the wellhead protection planning team can begin



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developing voluntary best management programs and outreach efforts designed to educate those living and working within the wellhead protection area on how they can all contribute to safeguarding the water supply.

How Large an Area Do You Need to Protect?

The rule says that if your water supply system currently draws more than 100,000 gallons a day you need to delineate an area around the well that would protect your community's ground water for five years. In other words, ground water directly underneath the boundaries of the delineated wellhead protection area would require approximately five years to travel to the pumping well (Figure 1).

To determine the exact shape and size of the wellhead protection area, a qualified ground water scientist must be hired to collect information about the geology of the underground area through which the water flows, the volume of water that is pumped each day, predicted increases in water use, and other factors. The scientist enters the information into a computer program that simulates the way the water flows through the subsurface. Analytical models, semi-analytical models, or numerical models can be used for this simulation. The modeling method recommended by the consultant will depend on the size of the system, the complexity of the geology, and the intended type of management.

Systems that pump less than 100,000 gallons per day are not required to hire a consultant to perform a detailed and scientific delineation. They have the option of delineating a 3000-foot radius around the supply well as the wellhead protection area. You can learn more about this option in WQ-29, "A Shortcut to Wellhead Protection Delineation for Some Systems." (See "Useful Publications.")

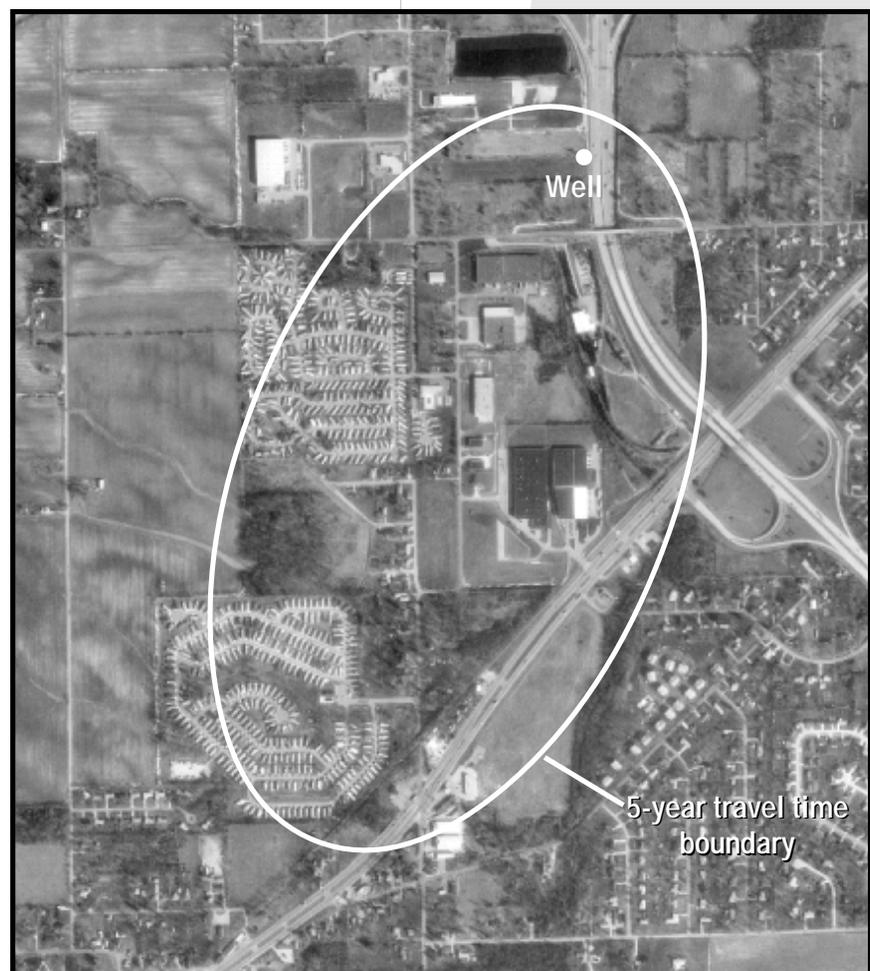


Figure 1. A wellhead protection area ideally encompasses the area from which ground water can travel to the well in five years or less. The wellhead protection area is elongated because of normal ground water flow.

How Do You Choose a Consultant?

Scope of Services

When you request a proposal from a potential consultant, you should know exactly how much you are asking the consultant to do. Do you want only the approved delineation or a contaminant source inventory as well? Is the consultant going to set up a geographic information system (GIS) for you that can be updated periodically for a negotiated fee? Or will you receive only paper maps? Decide exactly what you need before you begin selecting a consultant.

The consultant may offer to do the entire wellhead protection plan for a fee. Beware of accepting this option. If the community does not document its involvement through the local planning team, the plan will be incomplete and will not be approved by IDEM.

Provide a list detailing your expected deliverables to each potential consultant. Make sure each consultant addresses every item in the bid. Provide the phone number of a contact person who can answer questions about the proposal for the consultants. Attempt to choose from among three or more consultants who have submitted

similar proposals for consideration.

Completion Time

Delineations are complex and can require considerable time and effort. A delineation may require from three weeks to three months to complete. Get a clear estimate from the consultant on how much time the delineation will require. Make sure the date agreed to by each of the partners is stipulated in the contract.

Types of Models to Use

You may not know if you need an analytical, semi-analytical, or numerical model for the delineation. The most complex model is the numerical model. The least complex is the analytical model. Generally, the model needed is dictated by the geology of the area, available data, and the management tools available to your community. If the geology is very complex, you need a more sophisticated model and more data to validate the model. If you plan to pass zoning ordinances, the model needs to be legally defensible. You should question potential consultants about what model they recommend and why. If several consultants recommend the same type model for delineation, you will have more confidence in the recommendation.

Suggested Steps for Hiring a Consultant

1. Decide on the scope of services desired.
2. Request proposals from qualified consulting firms.
3. Evaluate the proposals.
 - Contact the references.
 - Interview the applicants.
4. Negotiate a contract.

A five-year travel-time boundary will be determined from the model. Inside this boundary is the delineated wellhead protection area. This area is not usually in the shape of a circle. Because ground water, like surface water, generally flows from a certain direction, the area that needs protecting will extend farther in one direction than in another. The delineated area may be more of a strip or an odd oval shape like the one shown in Figure 1.

Qualifications

A modeled delineation is complex and according to Indiana's Wellhead Protection Rule (327 IAC 8-4.1) must be completed by a "qualified ground water scientist." But what exactly is a "qualified ground water scientist"?

There is no specific license or certificate which will identify a "qualified ground water scientist." A Certified Professional Geologist (CPG) or a Professional Engineer (PE) should also have background and experience in the field of hydrogeology.



- A **hydrogeologist** is a geologist who has specialized in understanding the physical and chemical properties of underground water. A hydrogeologist has training in both geology and hydrology and is qualified to complete a wellhead protection delineation.
- A **hydrologist** studies surface water and ground water, may have a formal degree in geology, geography, or engineering, and is qualified to complete a wellhead protection delineation.
- A **Professional Engineer (PE)** has a degree in engineering and has passed an engineering board exam which covers many engineering areas. PE licenses are state-specific, so PE's licensed in one state are not necessarily licensed to practice in another state. Many Professional Engineers have studied hydrology, but being a PE does not necessarily make someone qualified to do a wellhead protection delineation.
- A **Certified or Licensed Professional Geologist (CPG)** has a degree in geology, a minimum of five years of experience, and has passed a national exam that covers many areas of geology. He or she may or may not have training in hydrogeology. Being a CPG does not necessarily make someone qualified to complete a wellhead protection delineation.

When you hire a consulting firm, you are usually hiring one person, perhaps with the assistance of support personnel, who will ultimately provide the finished delineation.

Determine the qualifications of the individual you are hiring. A large firm may have a hydrogeologist on staff; however, a firm could also subcontract with another firm for the services of a hydrogeologist. The individual responsible for modeling the delineation is the person to interview.

Educational and professional qualifications are the most important aspects to consider when hiring a consultant, but there are other considerations as well. The following are some suggestions that may be helpful in choosing a consultant for your delineation.

Communications Skills

Good consultants can clearly communicate the technical details of what they are trying to do. A knowledgeable consultant does not have to “snow” you and will appreciate having a well-informed client. Ask the consultant to describe in simple language how he or she will actually develop the delineation maps. If you can understand this explanation, it’s a good indication that he or she will probably be able to explain the details of the delineation model as well.

Accessibility

The consultant you choose should be accessible. If you have a question or concern, request assurance that you will be able to talk directly with the consultant within a reasonable period of time.



Questions for Potential Consultants

- Are you willing to work with the community and IDEM?
- Will you submit the delineation to IDEM for pre-approval?
- Will you make necessary changes or corrections?
- Will required corrections and changes increase our costs?
- Are you willing to attend public meetings and discuss your findings with the community?
- What is your educational background? (geology, engineering, hydrogeology, etc.)
- What is your experience in hydrogeology? (other projects related to wellhead protection)
- Have you done other delineations?
- Can you provide copies of some reports and/or delineations you have done?
- Can you provide letters of recommendation and references?

Questions for Former Clients

Ask the potential candidates about contacting former clients. You should speak with some of the people who have previously used this consultant to find out whether the consultant can deliver what he or she promises. Consider asking former clients the following questions.

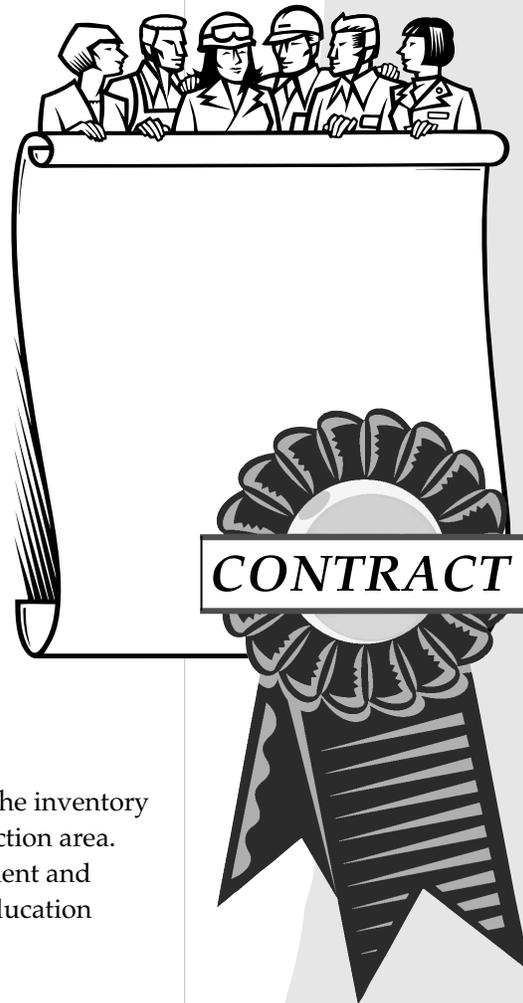
- Did the consultant stay within the budget?
- Did the consultant provide the services on time?
- Did the consultant deliver a usable product?
- Was the consultant readily accessible to answer questions?
- Would you recommend the consultant?
- Were you satisfied with the consultant?
- Would you hire the consultant again?

Contract Negotiation

The contract should state that all or part of the payment will be made contingent on a delineation which is approved by the Indiana Department of Environmental Management. If the delineation is not approved, the contract should state that you are under no obligation to pay for the remaining charges. The contract should specify that regular meetings between the consultant and the contract monitor will be held to discuss the progress made on the delineation.

What's Next?

The consultant you hire will help you start on the road to wellhead protection. After the Indiana Department of Environmental Management has approved your delineation, the wellhead protection planning team can complete the inventory of potential contaminants in the delineated wellhead protection area. The team can also begin working on formulating management and contingency plans, and developing a program for public education about wellhead protection.



Useful Publications

The following Purdue Extension publications provide information about other aspects of the wellhead protection process.

- WQ-2, "What Is Groundwater?"
- WQ-24, "Wellhead Protection in Indiana"
- WQ-28, "Forming the Wellhead Protection Planning Team"
- WQ-29, "A Shortcut to Wellhead Protection Delineation for Some Systems"
- WQ-31, "Inventorying Potential Sources of Drinking Water Contamination"

All are available free of charge through your county Purdue Extension office or by calling 1-888-EXT-INFO.

The USEPA has an informative publication, "Wellhead Protection, A Guide for Small Communities," EPA/625/R-93/002 available free by calling the USEPA Publication Office at 1-800-490-9198.

Indiana Information Contacts

- The Purdue Extension office in your county can provide you with information and resources on water quality protection. Look in the phone book under county government, or call 1-888-EXT-INFO.
- "Safe Water for the Future" is a Purdue Extension program that provides resources statewide on wellhead protection and watershed protection. Call 765-496-6331, or visit our Web site at <<http://www.ecn.purdue.edu/safewater>>.
- Indiana Department of Environmental Management, Ground Water Section, can provide information on Indiana's Wellhead Protection Rule and compliance. Call the Groundwater Section at 317-308-3321 or 800-451-6027, ext. 308-3321. Information is also available on the Web at <<http://www.ai.org/idem/owm/dwb>>.
- Indiana Water and Wastewater Association provides training and on-site assistance to water supply operators. They can be reached at 1-888-937-4992 or on the Web at <<http://www.iwwa.com>>.
- The Indiana "Rural" Water Association also provides education and assistance to water supply operators. They can be reached at 812-988-6631 or Fax 812-988-6961.

Acknowledgments

The authors wish to express our appreciation to the following people for their review of this publication:

Martha Clark, Indiana Department of Environmental Management, Office of Water Management, Drinking Water Branch;

Mary Hoover, Indiana Department of Environmental Management, Office of Water Management, Drinking Water Branch; and

Don Jones, Department of Agricultural and Biological Engineering, Purdue University.





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