

Wellhead Protection Tools

| | Description | Land Use Practice | Considerations | Example |
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| <u>Regulatory Options</u> | | | | |
| Zoning Ordinances: | Zoning ordinances typically are comprehensive land-use requirements designed to direct the development of an area. Many local governments have used zoning to restrict or regulate certain land uses with the WPA. | | | |
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| Special Permitting | Used to restrict uses within WPAs that may cause groundwater contamination if left unregulated. | Community adopts special permit “thresh holds” for various uses and structures within the WPA. Community grants special permits for “thresh hold” uses only if groundwater quality will not be compromised. | Well-organized method of segregating land uses within critical resource areas such as WPAs. Requires case-by-case analysis to ensure equal treatment of applicants. Requires amendment to zoning ordinance and enforcement, both visual inspection and onsite investigations. | A community adopts a requirement for all new commercial use within the WPA to obtain a special permit. This requires a plan review process that will identify any potential impact on groundwater quality and set special requirements to insure groundwater protection (i.e., secondary containment for fuel tanks). |
| Large Lot Zoning | Used to reduce impacts of residential development by limiting number of residential units within the WPA. | Community “down zones” to increase minimum acreage needed for residential development. | Well-recognized prerogative of local government. Requires rational connection between minimum lot size selected and resource protection goals. | Community decides to “down zone” the residential use zone, limiting the minimum lot size to be 5 acres. |
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| Transfer of Development Rights | Used to transfer development from the WPA to locations outside the WPA. | Community offers transfer option within the zoning ordinance. Community identifies areas where development is to be transferred “from” and “to”. | Accepted land use planning tool. Requires amendment to the zoning ordinance. Extensive administrative requirements. Not suited for small communities without significant administrative resources. | The owner of a land parcel located within the WPA wants to develop the parcel as an open gravel pit. The community owns the development rights to an adjacent parcel that falls outside the WPA. The community transfers their development rights to the owner for his so that the parcel within the WPA remains undeveloped. |
| Cluster Zoning and Planned Unit Developments (PUDs) | Cluster zoning is used to control residential development. It involves increasing densities within sections of a single zone while the remaining areas of the zone are left in open space. | Community offers cluster/PUD as development option within zoning ordinance. Community identifies areas where cluster/PUD is allowed. | Well accepted option for residential land development. The purpose is to increase density while maximizing open space. | A contractor is proposing a new residential development on land that is within Zones A and B of the WPA. The community approves the development with the provision that the residential housing would be clustered only on the land within Zone B of the WPA, while the land in Zone A would remain open space. |
| Subdivision Ordinances: | Subdivision ordinances are applied to land that is divided into two or more sub-units for sale or development. Local governments use this tool to protect WPAs in which on-going development is causing contamination. | Community establishes a subdivision ordinance tailored to apply to the WPA and impose basic density or open space requirements for the sake of preventing wellhead area contamination and promoting aquifer recharge. | Only applies when a parcel of land is divided for development purposes. May have legal implications or seen as a “regulatory taking”. | A community adopts a subdivision ordinance that recognizes the need to protect Zones A and B within the WPA. Under the ordinance, no development is allowed to occur within Zone A, while only low density residential development is allowed within Zone B. |
| Site Plan Review: | Site plan reviews are regulations | Community must establish a | Must have sufficient | A community requires a site |

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| | requiring developers to submit for approval plans for development occurring within a certain area. This tool ensures compliance with zoning and ordinance regulations, or other requirements made within the WPA. | zoning or subdivision ordinance requiring site plan review prior to construction. | administrative resources and technical expertise to perform the review. The less precise the requirements being reviewed, the more difficult it will be to evaluate reviews consistently and fairly. | plan review for any development other than residential within the WPA and any use of property that entails the storage of toxic or hazardous chemicals greater than 55 gallons. |
| Design Standards: | Design standards typically are applied to the design and construction of buildings, structures, or infrastructure items. This tool can be used to ensure that new buildings, structures, or infrastructure placed within the WPA are designed so as not to pose a threat to the quality of the drinking water supply. | Community establishes or modifies the zoning ordinance to include design standard specifications. | Only applies to new construction. Should be specific enough to allow consistent evaluation of a development project. Should be coordinated with operating standards to ensure the continued effectiveness of protection efforts. | A community adopts a zoning ordinance that establishes land use restrictions focusing on types of development and design standards for storage of hazardous waste. |
| Operating Standards (Best Management Practices – BMP): | Operating standards are regulations that apply to on-going land-use activities to promote safety or environmental protection. Such standards can minimize the threat to the WPA from on-going activities. | Community establishes or modifies the zoning ordinance to include operating standards. | May require considerable technical expertise. Most effective when used with zoning or subdivision ordinances and combined with site plan review. | A community enacted an ordinance that applies stringent construction standards for secondary containment structures for new facilities that store hazardous waste and applies special monitoring standards for existing facilities. |
| Prohibition of Land Uses (Source Prohibition): | Regulations that prohibit the presence or use of chemicals or hazardous activities within the | Community adopts prohibited uses list within their zoning ordinance. | Highly effective, although very stringent especially if contaminant sources already | A community decides to ban the placement of new underground fuel tanks within the WPA while |

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| | WPA. | | exist within the WPA. Should be implemented in phased approach. Most effective when used as part of a comprehensive plan. | not requiring that existing tanks be removed immediately. Replacement of existing tanks at the end of their service lives is prohibited. |
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| <u>Non-Regulatory Options</u> | | | | |
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| Groundwater Monitoring: | Groundwater monitoring generally consists of sinking a series of test wells in the WPA Zones A and B, and developing a on-going water quality testing program. This tool provides for monitoring the quality of the groundwater supply or the movement of a contaminant plume. | | Requires technical expertise, access to analytical testing laboratories, and sufficient resources to pay for monitoring costs incurred in well-drilling, sampling and testing. | Community implements an extensive water quality monitoring program by drilling several test wells throughout the WPA Zone A and B, and regularly assessing the quality of the groundwater. |
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| Purchase of Property or Development Rights: | The purchase of property or development rights is a tool used by some localities to ensure complete control of land uses in or surrounding a WPA. | | Can be very costly. In order to control the costs of acquiring land within the WPA, local governments can prioritize the lands to be acquired and emphasize donations and bargain sales of land interests. | A local government purchases 250 acres of land within the WPA Zone A from the property owner and restricts access from the public. |
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| Public Education: | Public education often consists of brochures, pamphlets, or public meetings designed to present wellhead area problems and protection efforts to the | | Content of public education materials will depend on local conditions and the target audience. May require time and resources to be effective. | A community forms a local advisory committee composed of local businesses, interest groups, the public, elected officials, and local or state government. The |

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| | <p>public in an understandable fashion. This tool promotes the use of voluntary protection efforts and builds support for a community protection program. Education of school children is an important element.</p> | | | <p>local advisory committee develops and implements a community education program, including a newsletter that keeps residents informed on issues concerning their public water system.</p> |
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| <p>Household Hazardous Waste Reduction</p> | <p>Residential hazardous waste management programs can be designed to reduce the quantity of household hazardous waste being disposed of properly. This type of program has been used in localities where municipal landfills potentially threaten groundwater due to improper household waste disposal in the WPA.</p> | | <p>May be costly and requires careful planning.</p> | <p>A local community implements a hazardous waste collection program. On specified days, homeowners can take their hazardous waste to a central location and dispose the waste material through a licensed hazardous waste disposal firm.</p> |
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| <p>Water Conservation:</p> | <p>Water conservation can help a community in two ways: by reducing the total quantity of water withdrawn from ground water aquifers and by protecting against contamination by reducing the rate at which contamination spreads in the aquifer.</p> | | <p>Requires spending resources and time educating water users on the need to conserve. Results may be short-lived.</p> | <p>A local community implements a water conservation educational campaign by mailing residents a brochure on why water conservation is important and ways they can save water.</p> |
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| <p>Community Involvement:</p> | <p>Community involvement brings people with different needs and values together to work toward</p> | | <p>Works well for small rural towns or villages. Although inexpensive, it requires firm</p> | <p>A small native village forms a citizen's group made up of local resident volunteers, a tribal</p> |

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| | <p>the common good of protecting their source of drinking water. Ideally is should involve forming a citizen's advisory group. Members may include local officials, community and/or tribal leaders, business groups, public health organizations, and water operators.</p> | | <p>leadership and long term commitment to be effective.</p> | <p>leader, a member of the health consortium, and the operator of their washeteria. The group holds monthly public meetings to make residents aware of activities and practices they can do to help protect their drinking water source.</p> |
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