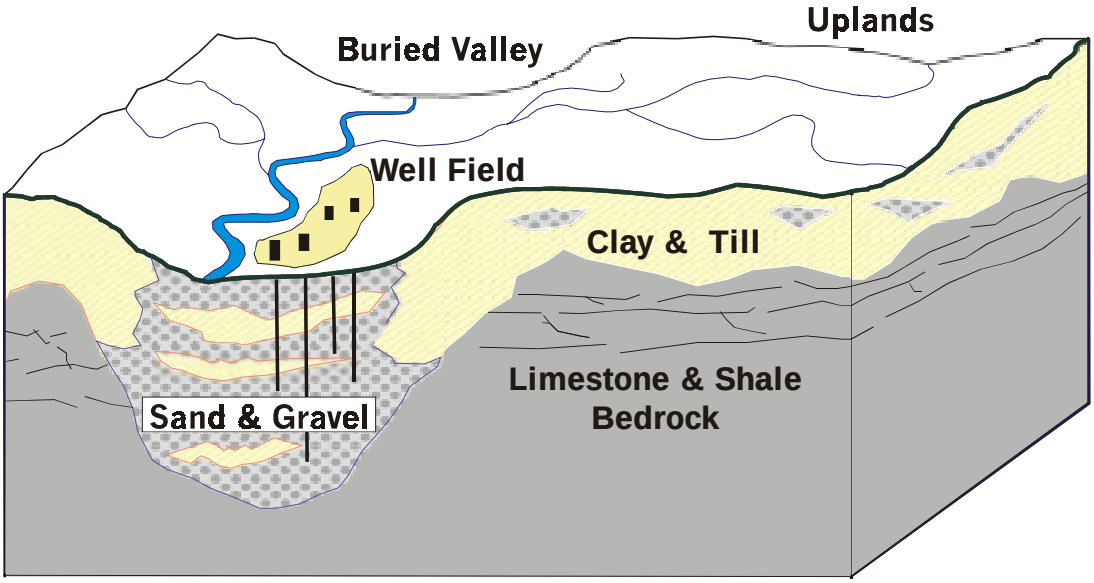
VILLAGE OF YELLOW SPRINGS

WELLHEAD

PROTECTION

MANAGEMENT

PLAN



Wellhead Protection Core Group

December 2000

VILLAGE OF YELLOW SPRINGS

WELLHEAD PROTECTION MANAGEMENT PLAN

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SUMMARY

The purpose of this Wellhead Protection Management Plan is to provide strategies for preventing, detecting and responding to ground water contamination that might reasonably impact water quality at the Village well field. It has been developed in response to requirements by the Ohio EPA.

This Management Plan represents the third and final phase in the development of a Wellhead Protection Program for the Village of Yellow Springs. The first two phases, the delineation of wellhead protection areas (see Figure 1) and the inventory of potential pollutant sources (see Table 1) have been previously endorsed by the Ohio EPA.

Section II presents guidelines for implementing the Plan. A cornerstone of the Plan is the formation of a broad-based Wellhead Protection Advisory Committee, consisting of multi-jurisdictional stakeholder representation, that can further develop, implement, and guide the Plan. To foster a higher level of stakeholder participation a number of strategies have been developed that emphasize cooperation and incentives. The initiation of a special Wellhead Protection Fund is recommended to support incentives aimed at helping individuals and groups reduce risk and implement best management practices that are protective of water quality (e.g. septic system repair, underground storage tank upgrade). Periodic review and revision of the protection area delineation and potential pollutant source inventory is needed to keep the Plan viable and scientifically valid. Implementing the Plan will be a dynamic process requiring long-term efforts to develop educational materials, offer opportunities for public input, and evaluate the effectiveness of strategies.

The Plan is built around four components (Section III) that include a comprehensive public participation and education program, an early-warning ground water (and surface water) monitoring program, an updated water supply contingency plan, and potential pollutant source control strategies. Sections IV through VII present specific strategies developed for each component that address the potential

pollutant source types previously identified in the potential pollutant source inventory. While many of the strategies are aimed at the Village's five-year time-of-travel (TOT) Wellhead Protection Area, some could be applied to areas beyond, in the Village and three involved Townships.

Key strategies in the Public Involvement and Education Component (Section IV) include an expanded Village hazardous waste collection and recycling program, agricultural best management practices education, storm sewer stenciling, posting of Wellhead Protection Area signs, and the development and distribution of groundwater protection educational materials.

Key strategies comprising the Contingency Planning Component (Section V) include the enhancement of Township Fire Department emergency response procedures, additional inventory of hazardous substance storage, and investigation of short- and long-term alternative water supplies for the Village.

The Monitoring Component (Section VI) includes continued ground water monitoring at the Village well field, communication and monitoring regarding contamination at the Morris Bean and Vernay sites, evaluation of other up-gradient potential pollutant sites, improved definition of the well field capture area, and monitoring of surface water quality.

Strategies in the Source Control Component (Section VII) include enforcement of existing Township, County, State, and Federal regulations, incentive programs to mitigate potential problems with septic systems and underground storage tanks, and the adoption of a conservation easement on the Village well field property. Other source control strategies include the purchase of private land and special conservation agreements, and the additional inventory and mitigation of drainage wells, electrical transformers, and abandoned wells.

Together these strategies form a management framework that can bring about a reasonable level of protection for the Village well field. Table 2 in Section VIII provides a summary of the specific strategies correlated with the appropriate potential pollutant source types.

Section IX presents recommendations to implement the Plan's general guidelines and specific strategies as described above.

Appendices are included that contain background information on the Wellhead Protection Core Group, a list of acronyms, a list of existing applicable rules and regulations, and a glossary of key terms.

VILLAGE OF YELLOW SPRINGS
WELLHEAD PROTECTION
MANAGEMENT PLAN

I. INTRODUCTON

The purpose of this Wellhead Protection Management Plan is to provide reasonable strategies for preventing, detecting and responding to ground water contamination that might reasonably impact water quality at the Village well field. The completion of Phase One - Wellhead Protection Area Delineation and Phase Two - Potential Pollution Source Inventory (PPSI), both previously endorsed by the Ohio Environmental Protection Agency (OEPA), form the technical and planning basis for the strategies outlined in this Plan.

As required by the OEPA, the Wellhead Protection Plan is intended to build upon the first two phases by:

1. Geographically focusing strategies on the one-year time-of-travel (TOT) Inner Management Zone (IMZ) and the five-year TOT Wellhead Protection Area (WHPA) delineated in Phase One.

2. Developing appropriate management strategies for addressing the potential pollution sources identified in Phase Two.

Figure 1 shows the one- and five-year TOT Protection Areas and the general locations of the potential pollutant sources determined in Phase One and Two. Table 1 also lists the specific and general point and nonpoint potential pollutant sources identified in the PPSI and the relative risk ranking of each.

Figure 1 Map of Protection Areas and Potential Pollutant Sources

Table 1 – Potential Pollutant Source Summary

IDENTIFIED POTENTIAL POLLUTION SOURCE	TIME-OF-TRAVEL ZONE		RELATIVE RISK		
	One-Year	Five-Year	High	Medium	Low
1. Village of Yellow Springs Water Treatment Plant	X				X
2. Morris Bean & Company		X	X		
3. Columbia Natural Gas Pipeline		X			X
OTHER POTENTIAL POLLUTION SOURCES					
Residential heating fuels	X		X		
		X			X
Septic systems	X			X	
		X		X	
Agricultural fuels		X			X
Stored agricultural chemicals		X		X	X
Agricultural chemical runoff	X				X
		X			X
Little Miami River	X				X
		X			X
Roads	X				X
		X			X
Little Miami Bike Trail (former railroad grade)	X				X
		X			X
Regulated hazardous materials	X		X		
		X		X	
Potentially hazardous, unregulated materials	X		X		
		X		X	
Sewage systems	X				X
		X			X
General lawn and garden chemicals	X				X
		X			X
Non-specific residential and agricultural pollution	X				X
		X			X
Electric transmission lines (transformers)	X		X		
		X	X		
Existing wells	X				X
		X			X
Residential businesses		X			X

From Yellow Springs Wellhead Protection Area Delineation and Potential Pollutant Source Inventory Report, Panterra, June 1998

II. PLAN FRAMEWORK

The Yellow Springs well field and wellhead protection areas are located outside of the Village corporation boundaries in portions of Miami, Xenia, and Cedarville Townships. Subsequently, the power to implement actions to protect the Village water supply lies largely with those jurisdictions and with those individuals that live and work within the wellhead protection areas. It is therefore important for the Village to use cooperation and mutual interest to implement truly effective strategies and bring about the level of protection required. Toward this goal the Wellhead Protection Commission Core Group (see Appendix A) has developed several important guidelines concerning the implementation and maintenance of the Plan.

A. Plan Implementation Guidelines

1. Program Development and Implementation - The development and implementation of the Village Wellhead Protection Plan is an ongoing, evolving process that will require the continued efforts of many jurisdictions, groups, and individuals into the future. Elements that are not included in this first Plan may be developed and included in future Plan updates.

2. Special Advisory Committee - The Village will establish a special "Wellhead Protection Advisory Committee", consisting of a wide spectrum of stakeholders representing the Village and Miami, Xenia, and Cedarville Townships and other agencies and groups as appropriate. The Committee will guide the implementation of the management plan and shall develop and coordinate an ongoing public education and information program for local elected officials and staff, school officials and teachers, and all water consumers on the need for protecting ground water.

3. Multi-jurisdictional Involvement - Because the Wellhead Protection Area is outside of the Village's jurisdiction, it is imperative that every effort be made to engage the other jurisdictions and parties involved in constructive activities that are protective of the Village water supply, and at the same time be respectful of private property rights.

4. Upgradient Areas - Protection strategies, as required by the OEPA, will primarily focus on the five-year time-of-travel (TOT) Wellhead Protection Area. However, due to questions about the well field's capture zone, its extent, and other potential pollutant sources, a variety

of strategies that include upgradient areas within and around the Village also will be developed and implemented.

5. Plan Emphasis - The Village will emphasize public education, contingency planning, ground water monitoring, and cooperative-based source control strategies as the cornerstones of its Plan.

6. Cooperative Approach - Priority will be placed on implementing cooperatively-based strategies that rely on education, incentives, and best management practices to bring about the level of protection desired. The Plan will make use of existing Village, Township, County, State and Federal rules and regulations. New regulatory mechanisms will be developed on an as needed basis.

7. Special Funding Mechanisms - The Village will develop a "Wellhead Protection Fund" by assessing water consumers a fixed amount each month for a fixed period of time. This Fund will be used to provide low-interest loans to residents and businesses as incentives to implement corrective measures and best management practices to reduce the risk of ground water contamination. Worthy projects include septic system upgrades, underground storage tank (UST) removals, well abandonment, and purchase of private land or its development /management rights.

8. Education and Best Management Practices - The Plan emphasizes educational approaches and best management practices for the storage, handling, and disposal of chemicals used in industrial, commercial, municipal, agricultural, and residential activities.

B. Plan Maintenance

The OEPA requires that key components of wellhead protection programs be periodically reviewed and revised as necessary to reflect changing factors.

1. Delineation Maintenance - The Village's one- and five-year TOT boundaries will be evaluated and revised as necessary to reflect changing production, new wells, and improved hydrogeologic data. For example, due to the recent repair of significant leaks in the

distribution system, Village ground water production has been significantly reduced. As a result, the protection area boundaries do not accurately reflect the production rates used in the 1997 protection area delineation. In the future, the delineation will need to be revised to reflect current production rates, water level information, and new hydrogeologic data.

2. PPSI Maintenance - As required by the OEPA, the PPSI will be updated periodically to reflect changing land use patterns and potential pollutant sources. A number of source categories were identified in the initial PPSI for which additional information could be gathered. These may include, but are not limited to, underground storage tanks (USTs), electrical transformers, septic systems, drainage wells, and abandoned wells.

III. VILLAGE PLAN COMPONENTS

The OEPA requires that the Management Plan address four basic components: (1) Public Participation and Education; (2) Contingency Planning; (3) Ground Water Monitoring; and (4) Source Control Strategies (see Figure 2).

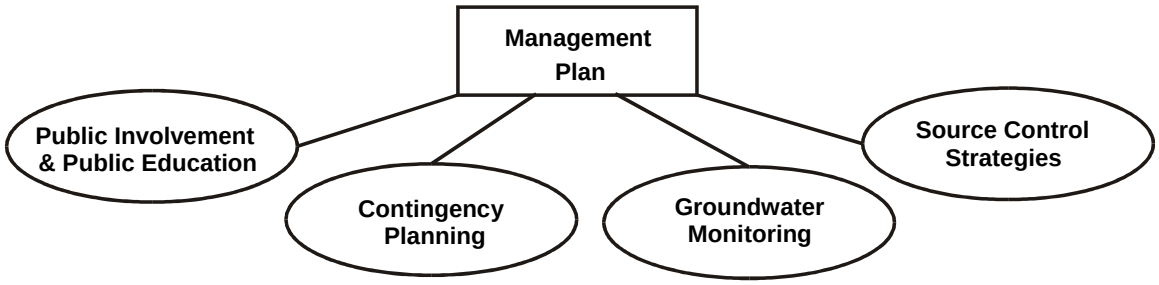

Figure 2 - Components of a Wellhead Protection Management Plan

Modified after Ohio EPA, October 1997

The development of the strategies that comprise each of the four Management Plan Components has been an evolutionary process, resulting not only from the input of the Wellhead Protection Core group, but also from the ideas brought forward from the Village's two previous Wellhead Protection Advisory Commissions.

The following sections outline the specific education, contingency, monitoring, and source control management strategies that form the basis of the Village Wellhead Protection Management Plan. The Wellhead Protection Advisory Committee is responsible for the planning, development, and implementation of these strategies. In each section, a number of key strategies are presented (in boxes), each coded with an alphanumeric Strategy Code (E1, E2, E3) that may be cross-referenced to the matrix in Table 2, Section VIII. In addition to being categorized by strategy type, each is also listed under headings of potential pollutant source types, i.e. municipal, commercial, industrial, agricultural, residential, and others.

IV. PUBLIC INVOLVEMENT AND EDUCATION (STRATEGY CODE - E)

The Public Involvement and Education Component is a cornerstone of the Management Plan. It strives to include all groups that have a stake in the protection of the area's ground water resources, including but not limited to, elected officials and community leaders, businesses, industries, farmers, residents, teachers, school children, and the media. The Public Involvement and Education Component is an on-going process that serves several purposes:

1. To inform the public about the purpose and objectives of the Wellhead Protection Plan;
2. To provide the public with a basic understanding of ground water;
3. To inform community members how their activities may affect ground water quality and what they can do to reduce potential impacts to the Village drinking water;
4. To foster a sense of ownership about ground water protection; and
5. To facilitate open dialogue among the various stakeholders involved in protecting the area's ground water resources.

The Wellhead Protection Advisory Committee will coordinate the development and implementation of educational strategies. The Village Public Involvement and Education Program includes a number of educational activities that will involve the relevant groups and meet the objectives outlined above. These include the education of residents and local officials (E6, E8), hazardous waste collection programs (E1, E2), home and agricultural best management practice education (E3, E9), wellhead protection area signage (E4, E5), and school curriculum development (E7). More detailed descriptions of these and other strategies are presented below.

POTENTIAL CONTAMINANT SOURCE TYPE: RESIDENTIAL

Strategy Code - E1 (also S15)

Public Education Strategy: Household Hazardous Waste Collection

The Village will advertise household hazardous waste collection programs sponsored by Greene County. Information on the time, place, and materials accepted will be advertised in inserts with water bills, in the local newspaper, and on local cable access television. Residents within the Wellhead Protection Area will be informed of household hazardous waste collection via direct mailings. The Village may provide satellite collection service prior to the County collection day.

Strategy Code - E2 (also S16)

Public Education Strategy: Hazardous Waste Collection/Recycling Center

The Village will continue to maintain its current oil recycling center, and as appropriate, expand the facility to include the collection of materials such as antifreeze, paint, batteries, etc. Information on the availability of this service will be advertised in inserts with water bills, in the local newspaper, on local cable access television, and via direct mailings to residents within the Wellhead Protection Area.

POTENTIAL CONTAMINANT SOURCE TYPE: AGRICULTURAL

Strategy Code - E3

Public Education Strategy: Agricultural Best Management Practices & Regulatory Requirements Education

The Village will designate a person or persons familiar with current agricultural practices and requirements to meet with appropriate agricultural related agencies and work cooperatively to educate farmers and rural land owners concerning best management practices (BMPs) and regulatory requirements that protect ground water. Agencies to be contacted include the Greene County Extension Office, Greene Soil and Water Conservation District (SWCD), National Resources Conservation Service (NRCS), Ohio Farm Bureau, Greene County Farm Bureau, and other agencies as deemed necessary.

POTENTIAL CONTAMINANT SOURCE TYPE: STORM SEWERS

Strategy Code - E4

Public Education Strategy: Signage

The Village maintenance staff will stencil "awareness messages" on Village sewer grates (catchment basins) and drainage wells (Class V Injection Wells, See Section V, Strategy Code C4). Local organizations such as Boy Scouts, Girl Scouts, and 4-H clubs could also assist as public service projects. The messages will state that dumping is prohibited and name the water body to which each drains. For example:

NO DUMPING

DRAINS TO YELLOW SPRINGS CREEK

Strategy Code - E5

Public Education Strategy: Signage

The Village, in cooperation with Ohio Department of Transportation (ODOT) and appropriate Greene County departments, will post signs at Grinnell Road bridge, and along Clifton Road and the bikeway to draw attention to well field protection areas. The signs shall read:

DRINKING WATER

PROTECTION AREA

REPORT SPILLS

1-800-762-2343

Other types of signage to draw attention to sensitive ground water and surface water supplies will be considered for the Village and Township areas beyond the five-year TOT.

POTENTIAL CONTAMINANT SOURCE TYPE: ALL

Strategy Code - E6

Public Education Strategy: Mailings

Village and Township residents shall receive mailings that focus on ways to protect ground water. Special emphasis should focus on raising awareness of those that live and work within the five-year TOT and capture zone. Fact sheets for various categories of potential pollution sources with suggested best management practices will be prepared and distributed through mailings.

Strategy Code - E7

Public Education Strategy: School Curriculum Development

Learning modules and educational materials will be prepared by the Wellhead Protection Advisory Committee and presented to local school children (Yellow Springs Schools, Antioch School, Greene County Career Center). Emphasis will be placed on the source and protection of their drinking water.

Strategy Code - E8

Public Education Strategy: Elected and Appointed Local Officials Education

A process will be developed by the Village to update and educate local elected and appointed officials and staffs regarding ground water protection. An orientation packet will be prepared by the Wellhead Protection Advisory Committee for distribution.

RESIDENTIAL AND AGRICULTURAL

Strategy Code - E9

Public Education Strategy: Home and Farm Owner Education

The Wellhead Protection Advisory Committee will investigate the Home *A* Syst and Farm* A *Syst Programs, available from the Greene County Extension Office, for possible use in the Village and Townships. These self-assessment programs are used nationwide and designed to help home and farm owners identify and minimize water quality pollution risks.

V. CONTINGENCY PLANNING (STRATEGY CODE – C)

Chapter 3745-85 of the Ohio Administrative Code (OAC) requires community water systems to have a contingency plan to provide guidance to management and employees when faced with emergency or disaster situations. The plan establishes guidelines and makes recommendations that reduce or eliminate the effects an emergency would have on the water system.

The Village's contingency plan developed in response to OAC 3745-85 (referred to henceforth as the "existing contingency plan") addresses the following emergency conditions:

1. Short term power failure;
2. Long-term power failure;
3. Absence of water supply personnel;
4. Drop in water level at storage tanks;

5. Contamination of wells due to flood, vandalism, or civil disorder (distribution system remains uncontaminated);
6. Contamination of wells due to chemical spill (distribution system remains uncontaminated);
7. Contamination of wells (distribution system is also contaminated);
8. Collapse of well;
9. Inability to obtain chemicals from supplier; and
10. Various failures of treatment and distribution systems.

A copy of this plan is kept on file at the Yellow Springs Water Treatment Plant on Jacoby Road. The objective of the Contingency Plan developed as part of the Wellhead Protection Plan is to establish actions to be taken and procedures to be followed to ensure that Yellow Springs is able to provide alternative sources of water to its users in emergency situations. The plan, which expands on the existing contingency plan, identifies:

1. Short and long-term sources of water;
2. Actions to be taken to conserve water;
3. Information activities to keep users aware of the water emergency;
4. Duties and responsibilities of involved persons, councils, and committees;
5. A funding mechanism for implementing the plan; and
6. Actions to respond to a spill that may endanger the Village water supply.

A. Short-term Source of Water

Yellow Springs uses about 450,000 gallons of water per day. The water towers at Gaunt Park have sufficient capacity to support normal usage for four days. Currently, the Village relies on one well field for its supply. Consequently, if this well field becomes impaired, a backup plan will have to be implemented quickly.

The following steps shall be taken in the event of a short-term interruption in service of the Village's public water supply:

1. Notify consumers of the emergency through the news media, cable access channel, and local organizations. A list of print and electronic news media that service the Yellow Springs area is included in the Village's existing contingency plan. A list of critical need water users

(clinics, nursing homes, etc.) is also included in the Village existing contingency plan. Critical need users shall be notified by phone or in person, by members of the Village staff.

2. Monitor progress in correcting problem and continue to broadcast updates.
3. Inform consumers of the need to reduce water use.
4. Implement plan to provide critical need water users with a short-term supply of water. A list of public water suppliers and water hauling services is included in the Village's existing contingency plan.
5. Implement plan to provide all other affected water users with a source of potable water. Two options have been planned for:
   (a) A water truck shall be provided at a centrally located site to distribute potable water; and
   (b) The Ohio National Guard (ONG) shall be contacted to supply temporary, above land water line from Xenia to Yellow Springs. The contact and number of the ONG is (614) 889-7155. The Montgomery Greene County Local Emergency Response Council (MGCLERC) can also be contacted to supply this line. The emergency contact and 24-hour number of MGCLERC is (937) 225-4357. Approximately four miles of temporary water line is needed to connect the Xenia distribution system with the Village's distribution system.
6. Take necessary actions to return the Village's public water supply to service. A list of public utility companies, water main suppliers and contractors, excavating contractors, electricians, well and pump service contractors, and chemical suppliers is included in the Village's existing contingency plan).

B. Long-term Source of Water

Two former Village well fields, one located at Ellis Park north of the Village and one located on the Funderburg farm in the buried valley northeast of the existing well field, have been examined as possible future long-term sources of water. Inquiries revealed that the aquifer underlying Ellis Park was incapable of meeting the Village's water demand due to insufficient surface water recharge. Multiple factors appeared to lead to the abandonment of the wells at the Funderburg farm including considerable drawdown, high iron, and access issues. These may not be factors in other parts of the buried valley.

Consideration was also given to exploring for a new well field should an emergency or other situation render the existing well field inadequate. A preliminary survey of potential sites close to Yellow Springs
revealed that the buried valley aquifer system from which the Village currently obtains its water is the only local aquifer capable of sustaining the Village demand. As a result, a new well field in another part of the buried valley should be considered as a possible long-term source of water. Such an option, while potentially viable for some contingencies, would not be an option if the entire buried valley aquifer were contaminated.

Four public water suppliers from jurisdictions surrounding Yellow Springs were identified as the best options to serve as the Village's long-term public water supply needs if the current buried valley source becomes unusable. These jurisdictions are:

1. City of Springfield
2. Greene County Office of Sanitary Engineering (serving Beavercreek and outlying areas such as the Greene County Career Center);
3. City of Xenia; and
4. City of Fairborn.

The Village will begin preliminary discussions with these jurisdictions to determine the feasibility of establishing interconnects with these systems. The goal is to enter into a memorandum of understanding with one or more of these jurisdictions to supply the Village with water if the local supply is compromised. Factors to be considered will include the cost of interconnecting, the cost of the water, and the adequacy of the supply.

C. Water Conservation Measures

The need to conserve water during a water emergency is essential; however, there are users with a critical need for a fixed supply of water. These users, and their average daily usage of water, are identified in the existing contingency plan. As part of the Wellhead Protection Management Program, these users will be surveyed to determine their minimum water requirements in an emergency, their storage capacity (if any), and other relevant information about their water use. Where possible, the Village will make provisions for continued operation of these facilities during

a water emergency. The critical need water users will be notified directly by the Village Manager's Office during a water emergency.

Water use restrictions directed toward non-critical users shall be implemented during an emergency. Depending on the severity of the emergency, the following activities could be restricted or prohibited:

1. Water for recreational uses, including swimming pools;
2. Washing cars;
3. Watering lawns and other vegetation;
4. Bathing or washing with water; and
5. Drinking or cooking with Village water.

The "Ohio Suggested Drought Response Actions" as presented in the existing contingency plan, will be followed in the event of a drought.

D. Information Activities, Duties, and Responsibilities

The Village Manager, the Public Works Director, the Yellow Springs Police Department, and the Township Fire Departments are key players in implementing contingency plans because of their leadership roles and their access to information.

The Village Manager and staff will be responsible for notifying all water users, including critical need users, in an emergency situation. All information will be channeled through the Village Manager's office before it is released to the news media. The Village Manager is also responsible for notifying local, state, and federal officials responsible for giving emergency assistance.

The local cable access channel, newspapers, radio, Village web site, and television will be used to get water emergency news to Village residents and businesses. Local civic groups and organizations will also be used to disseminate information.

E. Funding

The Village does not currently have a special emergency contingency fund for the public water system. Therefore, monies needed for emergency expenditures will be taken directly from the Village's ongoing cash balance.

In the event of an emergency, the Village Manager has full authority to make whatever purchases or expenditures are required. The Section 735.051 of the ORC allows the contracting officer of the Village to expend up to $15,000 without competitive bidding in case of an emergency.

F. Spill Response

The Contingency Plan component includes five strategies aimed at the wellhead protection area. These strategies include emergency response, updating hazardous material inventories, spill reporting, dry wells, and alternative supplies/treatment.

The specific strategies developed for the Contingency Plan Component are detailed below.

POTENTIAL CONTAMINANT SOURCE TYPE:
TRANSPORTATION, INDUSTRIAL, MUNICIPAL, AGRICULTURAL

Strategy Code - C1

Contingency Planning Strategy: Emergency Response

With financial assistance from the Village, the Township Fire Departments will coordinate existing and/or develop new formal operating procedures for spills and fires which might impact the Wellhead Protection Area. Procedures should include, but not be limited to, the following:

1. Location of well field protection areas and potential pollutant sites;
2. Identification of chain-of-command responsibilities for various types of incidents and sites;
3. Training of dispatchers to record relevant information about spills within the Wellhead Protection Area. A checklist of questions will be developed for dispatchers;
4. Provisions to dike any flow channels between the source and entry to an above or below ground water source, safety permitting. This includes provisions to dike drainage wells; and
5. Provisions to spread protective barriers beneath any leaks or spills, safety permitting; provisions are included in the operating procedures to allow certain types of Regulated Substances to burn. A decision by the Fire Department's command personnel will be made on a case by case basis.

Strategy Code - C2

Contingency Planning Strategy: Hazardous Material Inventory

Facilities that store quantities of hazardous substances reportable under the Superfund Amendments and Reauthorization Act (SARA) that may impact the Village water supply will be periodically inventoried by the Village. This information will be shared with the Township Fire Departments and the Dayton Area Regional HazMat Team to be used in the event of an emergency.

Strategy Code - C3

Contingency Planning Strategy: Spill Reporting

Existing SARA regulations require reporting spills of hazardous and/or extremely hazardous substances at or above SARA reportable quantities*, and other discharges of regulated substances that exceed the reportable quantity if they result in exposure to persons other than those within the boundary of the facility. The owner/operator of a facility where a SARA release has occurred is required to verbally notify the OEPA, the local fire department, and the Montgomery Greene Local Emergency Response Council (MGLERC) within 30 minutes of discovering a release of a reportable quantity of a covered substance (unless notification within that timeframe is impractical). The Village will coordinate and communicate with the Ohio EPA and local fire departments regarding the identification of and response to spills that occur in the area that may affect ground and surface water.

* The reportable quantity for spills involving petroleum is a "sheen upon the waters of the State" or 25 gallons

POTENTIAL CONTAMINANT SOURCE TYPE: DRAINAGE WELLS

Strategy Code - C4

Contingency Planning Strategy: Dike Drainage Wells/Storm Sewers in Event of Spill

Township Fire Department operating procedures will address emergency procedures for dealing with drainage wells (Class V Injection Wells). Specifically, any drainage well/storm sewer located within the vicinity of a spill shall be diked to prevent potentially harmful substances from entering the drainage well/storm sewer.

POTENTIAL CONTAMINANT SOURCE TYPE: ALL

Strategy Code - C5

Contingency Planning Strategy: Alternative Supply/Treatment

As per Ohio's Wellhead Protection Program (WHPP), the Village will update its existing contingency plan to include emergencies that may affect the quality and quantity of the Village water supply. The updated plan will include, but not be limited to:

1. An analysis of alternative short- and long-term water sources (e.g. hauling, interconnects with other supplies, enhanced treatment, new water supply sites);
2. Response measures such as treatment, containment, and well-shut down in the event of drought, flood, contamination, power outages, and other emergencies; and
3. Preparation of public notification procedures.

VI. GROUND WATER MONITORING (STRATEGY CODE - M)

A. Monitoring Purpose

Ground water monitoring is an integral element of the overall Management Strategy. It serves to help gauge the effectiveness of local protection and management efforts and to signal the need for

remedial action in case of contamination, or to modify local protection strategies, especially where information on ambient ground water quality is limited or unavailable. The early detection of potential contaminants at locations removed from the production wells can provide the additional time needed to exercise appropriate contingency plans, e.g., corrective action, treatment, location of new sources, and/or pumping strategies.

Monitoring is not a stand-alone activity, but one that needs to be integrated into the overall Program to supplement other strategies such as education, contingency planning, pollution prevention, and source controls.

B. Cost and Complexity

New monitoring wells shall be located along probable ground water flow paths relative to certain potential or known pollutant sources. In cases where access to private properties is limited, wells have to be located on public rights-of-way. In some cases, existing residential wells may be utilized if appropriately constructed.

The installation and ongoing chemical sampling of monitoring wells can be a relatively expensive activity. In some cases, multiple wells at various depths need to be installed and sampled to yield valid results. Depending on construction and depth, each monitoring well can cost up to $10,000 or more. Deep bedrock wells may cost more. Numerous chemical parameters often need to be evaluated to determine water quality impacts from potential sources. Comprehensive chemical sampling for each well may exceed $2,500 per year.

In addition, while monitoring in unconsolidated sand and gravel buried valley aquifers is relatively straightforward, ground water monitoring in upland bedrock aquifers, such as those underlying the Village and surrounding area, is more complex. This is due to the multiple bedrock formations present and the largely unknown fracture patterns that govern ground water flow. In such conditions there is no guarantee that multiple wells installed to measure potential or known impacts

from particular sites and sources will be located in a manner that will yield valid and useful information.

For the reasons stated above, it is important that monitoring strategies be well planned, tailored for the local situation, and designed to give meaningful and scientifically valid results.

C. Monitoring Well Design and Installation

All new monitoring wells installed should be designed and constructed as outlined in "Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers" (Standard Designation #D 5092-90) by the American Society for Testing and Materials (ASTM).

All monitoring wells installed for the Village should be prepared in accordance with detailed bid specifications. To facilitate future water level surveys, accurate surveyed elevations should also be established for all new monitoring wells following installation.

D. Sampling Parameters and Schedules

For all monitoring wells and sites, the Village's consultant will develop a plan that details specific monitoring goals and costs, as well as sampling procedures and schedules tailored to each. Depending on the location and objectives, wells will be monitored for combinations of parameters in the following groups: general ions, inorganics/metals, volatile organic compounds (VOCs), synthetic organic compounds (SOCs), bacteriologic, and indicators/ diagnostics.

POTENTIAL CONTAMINANT SOURCE TYPE:
AGRICULTURAL / RESIDENTIAL LAWN AND GARDEN

Strategy Code - M1

Monitoring Strategy: Village Well Field Property Sampling

The Village, at appropriately scheduled intervals, will collect water quality samples from production and monitoring wells at the well head for testing of synthetic organic chemicals (SOCs) and nitrates. SOCs include common pesticides, herbicides, and insecticides, associated with agricultural activities and residential/municipal lawn and garden care.

POTENTIAL CONTAMINANT SOURCE TYPE: INDUSTRIAL/COMMERCIAL

Strategy Code - M2

Monitoring Strategy: Village Well Field Property Sampling

The Village, at appropriately scheduled intervals, will collect water quality samples from production and monitoring wells at the well field for the testing of volatile organic compounds (VOCs) associated with industrial, commercial and municipal activities.

Strategy Code - M3

Monitoring Strategy: Upgradient Source Monitoring (specific)

The Village will work cooperatively with the Vernay and Morris Bean companies to insure that communication remains open and that information concerning their ground water investigations are available to the Village. As necessary the Village will establish and sample monitoring wells pertinent to these sites to insure that contamination is mitigated and public health protected. The Village has established its own monitoring wells at the well field in order to detect the presence of contaminants migrating off the Morris Bean site.

POTENTIAL CONTAMINANT SOURCE TYPE: ALL

Strategy Code - M4

Monitoring Strategy: Upgradient Source Monitoring (general)

Various potential contaminant sources have been identified in upgradient areas beyond the five-year time-of-travel boundary. Some of these have been identified and discussed by the Wellhead Protection Advisory Commissions and community at various times during the development of the Village's Program. Some, such as the contamination at the Vernay and Morris Bean sites, have undergone significant investigation and remedial measures are being designed and/or implemented.

There are other sites for which only anecdotal information and incomplete data exists concerning potential water quality impacts. These include, but are not limited to, the old Village dump at Gaunt Park, the Village farm/maintenance facility on State Route 343, the Antioch University heating plant, and other small concentrations of older commercial and industrial activities within the Village. The Village will need to seek professional evaluations of such sites to establish the real level of threat or impact they pose. As necessary, ground water monitoring plans will be developed for select sites to assess impacts and provide necessary response time. A qualified hydrogeologic consultant will be needed to assess sites and develop monitoring strategies.

The Village will implement monitoring for possible nonpoint sources of pollution such as lawn and garden chemicals, agricultural chemicals, and street and parking lot runoff in upgradient areas, as necessary. Monitoring wells will be installed on accessible properties and public rights-of-way.

Strategy Code - M5

Monitoring Strategy: Upgradient Sources - Surface Water Monitoring

Due to concerns regarding the influence the Little Miami River may have on the well field, an ongoing program of monitoring surface water quality trends in Yellow Springs Creek and the Little Miami River upgradient of the well field will be designed and implemented. This work could be done by local universities and/or private consultants, and overseen by the Wellhead Protection Advisory Committee. New information will be integrated and reviewed with the water quality/aquatic habitat surveys of the Upper Little Miami River that are conducted by the OEPA every five years, as well as the Total Maximum Daily Load (TMDL) Program currently being developed for the Upper Little Miami.

In addition, potential malfunctions at the Village wastewater treatment plant, which discharges to Yellow Springs Creek, should be fully examined for potential impacts on surface and ground water supplies at the well field

Strategy Code - M6

Monitoring Strategy: Surface water/ Ground Water Interaction Investigations

Due to concerns regarding the influence the Little Miami River and its tributaries may have on water quality at the well field, additional research will be conducted to determine the potential interactions. This work could be done by local universities and/or private consultants, and overseen by the Wellhead Protection Advisory Committee.

Strategy Code – M7

Monitoring Strategy: Capture Area Delineation / Investigation

In the Fall of 1999, Panterra Inc. defined a preliminary capture area (total potential capture area for ground water serving the Village wells) for the Village well field. This capture area was based on limited and scattered water level data and is therefore questionable in its accuracy. While the current version is useful for general planning and discussion, a more accurate area should be defined for detailed planning and site-specific uses. As necessary, the Village will focus future investigation on better defining the capture area as it extends both upgradient into the buried valley and under the upland areas.

VII. SOURCE CONTROL STRATEGIES (STRATEGY CODE - S)

Source control strategies are designed to reduce the risk of ground water contamination both within and beyond the Wellhead Protection Area. They may include source prohibitions, source restrictions, design standards, operating standards, reporting requirements and documentation. Such strategies may be implemented via existing regulations, new regulations, educational programs and/or voluntary measures. This plan stresses the use of the existing regulatory structure, i.e., local, state and federal environmental, health, and safety regulations to provide the level of protection required (S1, S2, S3, S13, S14). Appendix C lists a number of these rules and regulations that are already in effect. In addition, the use of best management practices through

improved design and operating standards are

encouraged though locally-based activities that include educational and financial incentive programs to reduce risk (S5, S6, S12, S13, S16). Some strategies are designed to collect improved information on known and potential pollutant sources via communication with owners, additional inventory, and documentation (S4, S10, S11, S17). Actions are recommended for source control on the Village-owned well field property, including the establishment of a conservation easement (S8) and best management practices (S7). The purchase of private land and/or development rights and agricultural management rights are also options that will be exercised as needed (S9).

POTENTIAL CONTAMINANT SOURCE TYPE:
INDUSTRIAL, COMMERCIAL, RESIDENTIAL, & AGRICULTURAL

Strategy Code - S1

Source Control Strategy: Existing Township Zoning

Strategy Type: Source Prohibition and Source Restriction

The Miami, Xenia, and Cedarville Township zoning resolutions include provisions for conditional and prohibited uses of land that could be detrimental to ground water resources within the Village Wellhead Protection Area. The Village will inform the appropriate Township governing bodies via official letters of record of the importance of protecting the Village water supply through the enforcement of existing Township zoning resolutions.

Nearly all the land within the Wellhead Protection Area is zoned agricultural and as such has certain associated conditional uses and restrictions. A number of conditional uses that require approval by the respective Board of Zoning Appeals also require proof that proposed uses not be detrimental to the environment. These conditional uses include, but are not limited to, sanitary landfills, mineral extraction (quarries, sand & gravel pits), junkyards, agribusiness, and municipal sludge disposal. A number of these are subject to State and/or County siting and permit requirements and oversight.

A significant portion of the Little Miami River valley within the Wellhead Protection Area is also located in the 100 year floodplain as designated by the Federal Emergency Management Agency (FEMA). The Township resolutions set forth prohibitions and restrictions for these areas including

the prohibition of all future residential housing development and restrictions on the building of other structures.

Additional commercial, industrial, and residential development of private lands within the Wellhead Protection Area and the Little Miami River valley upgradient of the well field is also limited due to the lack of public roads with available access and frontage.

Strategy Code - S2
Source Control Strategy: Existing Regulations (State and Federal)
Strategy Type: Source Prohibitions and Design Standards

Much of the Village Wellhead Protection Area is located over a federally designated Sole Source Aquifer (SSA) *(see Figure 6, Page 26, Phase One & Two Report available from the Village)*. Ohio's Bureau of Underground Storage Tank Regulations (BUSTR) recognizes federally designated Sole Source Aquifers as Sensitive Areas (OAC 1301:7-9-09). Underground storage tanks (USTs) within a Sensitive Area are required to be designed and built to a higher standard than USTs outside of a Sensitive Area (OAC 1301:7-9-10). Design standards for USTs in Sensitive Areas pertain to secondary containment, leak detection, spill prevention, and inspection. Certain types of USTs are prohibited. The OEPA also prohibits the siting of a solid waste landfill and construction and demolition debris sites over a designated Sole Source Aquifer.

POTENTIAL CONTAMINANT SOURCE TYPE: SEPTIC SYSTEMS

Strategy Code - S3
Source Control Strategy: Existing Regulations: State and County
Strategy Type: Source Restrictions, Design Standards, and Operating Standards

The Greene County Combined General Health District's household sewage regulations address source restrictions, design standards, and operating standards for on-site septic systems. These regulations restrict the use of septic systems to properties where a public sanitary sewer system is

not available. Minimum state requirements for design, construction and permitting of such systems are set forth in OAC 3701-29.

Strategy Code - S4

Source Control Strategy: Village Assistance/Oversight

Strategy Type: Source Restrictions, Design Standards, and Operating Standards

The Village will identify and maintain an inventory of septic systems within the five-year TOT Wellhead Protection Area. The Village will assist in the testing and pumping of the residential septic systems in the immediate proximity of the Village wells and develop and adhere to a protocol for maintaining its own septic system at the water plant.

Strategy Code - S5

Source Control Strategy: Septic System Upgrade/Improvement Financial Assistance

Strategy Type: Design Standards and Operating Standards

The Village will establish a Wellhead Protection Fund from which residents with failing or improperly designed septic systems may receive low interest loans or cost sharing incentives for necessary improvements. Priority will be given based on system age, condition and proximity to the well field.

POTENTIAL CONTAMINANT SOURCE TYPE:
ABOVE & UNDERGROUND STORAGE TANKS

Strategy Code - S6

Source Control Strategy: Storage Tank Upgrade/Improvement Financial Assistance

Strategy Type: Design Standards and Operating Standards

The Village will establish a Wellhead Protection Fund from which residents with above and/or underground storage tanks may receive low interest loans or cost sharing incentives for necessary improvements or removal. Priority will be given based on tank condition, number, size, and proximity to the well field.

POTENTIAL CONTAMINANT SOURCE TYPE: ALL

Strategy Code - S7
Source Control Strategy: Control of Land Use through Village Ownership
Strategy Type: Design Standards and Operating Standards

The Village currently owns approximately 53 acres surrounding the well field and the water treatment plant. As a result, the Village is able to control land use practices in a significant area directly around its wells through its own internal policies. As part of the Wellhead Protection Management Plan, the Village will implement best management practices (BMPs) for lawn care, chemical storage and handling, and water treatment plant operation that are protective of ground water.

Strategy Code - S8
Source Control Strategy: Conservation Easements /Agreements
Strategy Type: Source Restrictions and Prohibitions

The Village will establish a conservation easement on its 53 acre well field property that will insure that future development is prohibited and/or limited.

Much of the upgradient portion of the Wellhead Protection Area and the buried valley beyond is part of Glen Helen (Antioch University). The Village will work cooperatively with the Glen Helen Ecology Institute to insure that future development of that property is limited or prohibited. This could be done through a conservation easement or other formal agreement.

POTENTIAL CONTAMINANT SOURCE TYPE: AGRICULTURAL/OPEN SPACE

Strategy Code – S9
Source Control Strategy: Purchase of Land, Development Rights, & Easements
Strategy Type: Source Restrictions and Prohibitions

The Village will employ voluntary source control options aimed at reducing risk to its water supply through the purchase of land, development rights, and special conservation easements and

agricultural management agreements. The Wellhead Protection Fund could be utilized to support these options including, but not limited to:

1. Village purchase of private lands within and beyond the Wellhead Protection Area. Risk reduction is realized through public ownership, management, and initiation of best management practices.
2. Purchase of development rights from private landowners and the establishment of conservation easements through such organizations as the Tecumseh Land Trust and the American Farmland Trust.
3. Conservation Reserve Program (CRP). Federal program that offers incentives to farmers and rural landowners to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, such as grasses, wildlife plantings, trees, or riparian buffers. Administered locally by the Greene County Soil and Water District (SWCD), priority for eligibility is given to areas within designated wellhead protection areas. The CRP provides cost sharing and annual rental payments for multi-year contracts.
4. Village lease or rental of limited management rights from farmers to reduce risk through best management practices and less intensive cropping activities. Annual payments for multi-year contracts could supplement or replace CRP agreements.

POTENTIAL CONTAMINANT SOURCE TYPE: DRAINAGE WELLS

Strategy Code – S10

Source Control Strategy: Existing Regulations/ Inventory

Strategy Type: Source Prohibitions, Source Restrictions, Reporting Requirements and Documentation

The Village will conduct an inventory of drainage wells (Class V Injection Wells) within its corporation limits. While no drainage wells are known to exist within the protection areas, supplemental inventory will be carried out.

Pursuant to OAC 3745-34-13 through 15, owners of Class V Injection Wells are required to submit ownership information, location, purpose, and operating status of all drainage wells to the OEPA

Underground Injection Control Program. The OEPA will then make a determination as to whether the wells require a permit.

POTENTIAL CONTAMINANT SOURCE TYPE: ELECTRICAL TRANSFORMERS

Strategy Code - S11

Source Control Strategy: Transformer Inventory

Strategy Type: Source Prohibition, Reporting Requirements and Documentation

Village officials will meet with officials from Dayton Power and Light (DP&L) to document the status of all transformers within the Wellhead Protection Area. If the Village has any transformers containing polychlorinated biphenyls (PCBs), it will develop a plan to have these transformers removed and replaced with a safer type of transformer. The objective is to have all PCB transformers removed within a three-year time frame.

POTENTIAL CONTAMINANT SOURCE TYPE: TRANSPORTATION

Strategy Code - S12

Source Control Strategy: Road/Right-of-Way Maintenance

Strategy Type: Source Restriction, Design Standards, Operating Standards

The Village will work with the appropriate Townships, Greene County Highway Department and ODOT to establish best management practices that are protective of surface water and ground water. Reductions in salt usage and weed control chemicals along roadways that drain directly to the Yellow Springs Creek and the Little Miami River will be emphasized.

POTENTIAL CONTAMINANT SOURCE TYPE: ABANDONED WELLS

Strategy Code - S13

Source Control Strategy: Existing Regulations/ Inventory

Strategy Type: Source Prohibition, Reporting Requirements and Documentation

An inventory of out-of-service wells within the Village and the five-year TOT Wellhead Protection Area will be conducted. Those wells that are no longer needed will be abandoned pursuant to ORC 1521.05 and OAC 3745-9-10. If hardship exists, the Village may assist the owner with low interest loans or cost sharing incentives for necessary abandonment.

POTENTIAL CONTAMINANT SOURCE TYPE: PRIVATE WELLS

Strategy Code - S14
Source Control Strategy: Existing Regulations/ Inventory
Strategy Type: Source Restrictions, Reporting Requirements and Documentation

Permits for private wells are obtained from the Greene County Combined Health District. ORC 3701-28 provides uniform standards and procedures for design, construction, inspection, maintenance and abandonment of private wells. The Village will identify and maintain an inventory of private wells within the five-year TOT Wellhead Protection Area.

POTENTIAL CONTAMINANT SOURCE TYPE: RESIDENTIAL

Strategy Code - S15 (also E1)
Source Control Strategy: Household Hazardous Waste Collection
Strategy Type: Operating Standards

The Village will advertise household hazardous waste collection programs sponsored by Greene County. Information on the time, place, and materials accepted will be advertised in inserts with water bills, in the local newspaper, and on local cable access television. Residents within the Wellhead Protection Area will be informed of household hazardous waste collection via direct mailings. The Village may provide satellite collection service prior to the County collection day.

Strategy Code - S16 (also E2)
Source Control Strategy: Hazardous Waste Collection/Recycling Center
Strategy Type: Operating Standards

The Village will continue to maintain its current oil recycling center, and as appropriate, expand the facility to include the collection of materials such as antifreeze, paint, batteries, etc. Information on

the availability of this service will be advertised in inserts with water bills, in the local newspaper, on local cable access television, and via direct mailings to residents within the Wellhead Protection Area.

POTENTIAL CONTAMINANT SOURCE TYPE: NATURAL GAS PIPELINE

Strategy Code - S17

Source Control Strategy: Communication

Strategy Type: Operating Standards

The Village will notify the Columbia Gas Company that its natural gas pipeline traverses the Village's Wellhead Protection Area. While natural gas poses no threat to ground water quality at the well field, there is minor risk associated with the maintenance and repair of pipelines from machinery and equipment fluid leakage. The Village will request that the Company take all reasonable precautions in these activities and provide notification of significant leaks, repairs, and emergencies.

VIII. MANAGEMENT STRATEGY INTEGRATION

The Ohio EPA requires that wellhead management plans include management strategies for each type of potential pollutant source identified in the PPSI. When the potential pollutant sources are interwoven with the appropriate management strategies, a protective "fabric" or framework results that can be used to manage reasonable risk to drinking water supplies. The matrix in Table 2, provides a summary of specific strategies that will be employed for various types of potential pollutant sources identified in the PPSI. In the matrix, beside each potential pollutant source type are strategy codes (E1, C1, M1, S1, etc.) that correspond to a specific strategy described in Sections IV through VII. Bullets (●) indicate the general area (one-year TOT, five-year TOT, or beyond) where potential sources are known or assumed to possibly exist and where strategies will be focused. In some cases, potential source are listed, e.g. landfill, demolition debris, and dumps, that were not identified in or around the Wellhead Protection Area. These are included as a means to indicate that strategies exist that limit or prohibit such sources and activities.

Table 2 - Management Strategy Summary Matrix
Village of Yellow Springs Wellhead Protection Program

Potential Contaminant Source Categories	Area of Emphasis			Management Strategy Categories			
	1 year TOT	5 Year TOT	Beyond 5 Year TOT	Public Involvement / Education	Contingency Planning	Ground Water Monitoring	Source Control
Municipal							
Water Treatment Plant Chemicals	!			E8	C1, C2,C3, C5	M1, M2	S7
Water Treatment Plant Septic System	!			E8	C5	M4	S3, S4, S5, S7
Power Transformers	!	!		E8			S11
Well Field Property (Village-owned)	!	!		E8		M4	S7, S8
Industrial /Commercial							
Outdoor Storage/Disposal		!		E8		M2, M3, M4	
Above Ground Tanks (Fuels, Solvents)		!		E6, E8	C1,C2,C3		S2, S6
General Storage (Indoor)		!		E6, E8	C1, C2, C3	M4	
Lagoons		!		E8		M2, M3	
Septic Systems	!	!	!	E6, E8			S5, S10
Natural Gas Pipeline		!		E8	C1		S17
Agricultural							
Fuel storage (Above & Below Ground tanks)			!	E3, E6, E8, E9	C1		S2, S6
Agri-Chemical Storage			!	E1, E3, E6, E8, E9	C1	M1	S15

Table 2 - Management Strategy Summary Matrix
Village of Yellow Springs Wellhead Protection Program

Potential Contaminant Source Categories	Area of Emphasis			Management Strategy Categories			
	1 year TOT	5 Year TOT	Beyond 5 Year TOT	Public Involvement / Education	Contingency Planning	Ground Water Monitoring	Source Control
Agricultural							
Vehicle Fluid Storage/Use (fuels & lubricants)	!	!	!	E1, E2, E3, E6, E8, E9	C1		S15, S16
Bulk Manure Storage *				E3, E6, E8, E9	C1		
Agri-Chemical Use	!	!	!	E1, E3, E6, E8, E9	C1	M1, M4	S9, S15
Wells (Active & Inactive)		!	!	E6, E8, E9			S13, S14
Residential							
Septic Systems	!	!	!	E6, E7, E8, E9		M1, M2, M4	S3, S4, S5, S6
Fuel Oil Tanks (Above & Underground)	!	!	!	E6, E8, E9	C1	M1, M2, M4	S2, S6
Wells (Active & Inactive)	!	!	!	E6, E8, E9		M1, M2, M4	S13, S14
Chemical Storage/ Use (pesticides, fuels, solvents)	!	!	!	E1, E2, E6, E7, E8, E9	C1	M1, M2, M4	S2, S15, S16
Chemical Application (lawn & garden)	!	!	!	E3, E6, E7, E8, E9		M1, M2, M4	S9
Vehicle Fluid Storage/Use (fuels & lubricants)	!	!	!	E1, E2, E3, E6, E7, E8, E9	C1		S15, S16

Table 2 - Management Strategy Summary Matrix
Village of Yellow Springs Wellhead Protection Program

Potential Contaminant Source Categories	Area of Emphasis			Management Strategy Categories			
	1 year TOT	5 Year TOT	Beyond 5 Year TOT	Public Involvement / Education	Contingency Planning	Ground Water Monitoring	Source Control
Residential							
Drainage Wells (Dry Wells)			!	E6, E2, E8, E9, S15	C4		S10, S14
Little Miami River (surface water)							
Surface water/Groundwater Interaction	!	!	!	E8		M6	
Storm Water (Non point Sources)			!	E3, E4, E8	C4	M5	
Road/Ditch runoff (salt, herbicides, vehicle fluids)			!	E4, E5, E8			S12
Yellow Springs WWTP Effluent			!	E6, E7, E8	C5	M5	
Hazardous Spills (Grinnell Rd., Rt 72, Clifton Rd. Rt 343, Rt 68)			!	E5, E8	C1, C2, C4, C3, C5		
Other Waste Disposal (Unregulated & Regulated)							
Landfills *				E8			S1,S2
Demolition Debris *				E8			S1,S2
Dumps Unregulated *				E8			S1,S2

* not identified as existing potential source in or around wellhead protection area.

IX. RECOMMENDATIONS

Implementing the Village's Wellhead Protection Management Plan will be a dynamic process requiring long-term commitment and effort to develop educational materials, offer opportunities for public involvement, and evaluate the effectiveness of strategies. The goals of the Plan will be realized through the implementation of the following actions:

1. The Village will form a Wellhead Protection Advisory Committee, consisting of broad stakeholder representation, that will develop wellhead protection strategies, guide their implementation, and assess their effectiveness.

2. The Village will strive to maintain multijurisdictional involvement in the Program through the facilitation of constructive relationships based on mutual cooperation and respect.

3. The Village and the Wellhead Protection Advisory Committee will implement the specific management strategies (Public Involvement and Education, Contingency Planning, Ground Water Monitoring and Source Controls) outlined in Sections IV through VII and summarized in Table 2.

4. The Village and the Wellhead Protection Advisory Committee will develop a special Wellhead Protection Fund to be used to provide low interest loans and/or cost sharing to residents and businesses as incentives to implement corrective measures and best management practices to reduce the risk of contamination of ground water. The Fund will also be used to support the purchase of land and special easements and agreements, as available.

5. Both the Protection Area delineation and the PPSI will be reviewed periodically and modified as appropriate to reflect changing ground water production, improved hydrogeologic data, and/or land use activities.. Additional inventories of specific categories of potential pollutant sources (e.g. drainage wells, unused wells, electrical transformers) will be needed.

6. The Village will strive to facilitate the gathering of additional data regarding the complex bedrock geology, and the contribution of bedrock aquifers and the Little Miami River to the buried valley. Uncertainties about the extent of the well field capture area will be addressed.

7. The Village and the Wellhead Protection Advisory Committee will strive to develop and implement strategies that focus on potential point and nonpoint sources beyond the five-year TOT Wellhead Protection Area, as appropriate.

APPENDIX A

WELLHEAD PROTECTION CORE GROUP

The OEPA strongly recommends that Wellhead Protection Management Plans be developed by a broad-based Committee consisting of local representatives and stakeholders. The completion of this Management Plan represents the culmination of many years of effort by a series of such groups. The first Commission, formed in 1992, completed the first two phases of the Plan and was replaced in 1999 by a second Commission charged with completing the Management Plan phase. The second Commission consisted of members chosen by the Village Council, and as required by the OEPA, included broad stakeholder representation and expertise. In January 2000, due to political controversy, the Village Council disbanded the second Commission with the intent of hiring a private consultant to complete the Plan.

In April 2000, the former members of the second Commission were invited to a meeting to explore ways that their original charge could be completed on behalf of the community. A majority of the former members, called the "Wellhead Protection Core Group ", elected to proceed with completing this Plan and subsequently present it for public review and consideration. The members of the Wellhead Protection Core Group are listed below:

1. David Case	Little Miami Incorporated, Miami Township resident
2. Bob Curley	Hydrogeologist, Village resident
3. Rick Donahoe	Village resident
4. Scott Hammond	Hydrogeologist, Miami Township resident
5. Sarah Hippensteel	Water Resources Professional, YSI Incorporated representative
6. Bonnnie Hoagland	Health Care Professional, Educator, Miami Township resident
7. Moira Laughlin	Hydrogeologist, Village resident
8. Phil Lemkau	Educator, Village resident
9. Randy Rife	Farmer, Miami Township resident
10. Kevin Sedensky	Morris Bean & Company representative
11. Shelbert Smith	Chemist, Village resident
12. Joe Staggs	Farmer, Miami Township resident
13. Keith Swigart	Educator, Village resident

APPENDIX B

LIST OF ACRONYMS

ASTM-	American Society for Testing and Materials
BMP -	Best Management Practice
BUSTR -	Bureau of Underground Storage Tank Regulation
CFR-	Code of Federal Regulations
CRP-	Conservation Reserve Program
CWA -	Clean Water Act
EPA -	Environmental Protection Agency
EPRCA -	Emergency Planning and Community Right-to Know Act (SARA Title III)
FEMA -	Federal Emergency Management Agency
IMZ -	Inner Management Zone
MGCLERC -	Montgomery Greene County Local Emergency Response Council
MSDS -	Material Safety Data Sheet
NPDES -	National Pollution Discharge Elimination System
NRCS -	Natural Resources Conservation Service
OAC -	Ohio Administrative Code
ODH -	Ohio Department of Health
ODNR -	Ohio Department of Natural Resources
ODOT -	Ohio Department of Transportation
OEPA -	Ohio Environmental Protection Agency
ONG -	Ohio National Guard
ORC -	Ohio Revised Code
OSHA	Occupational Safety and Health Administration
PCB -	Polychlorinated biphenyls
PPSI -	Potential Pollution Source Inventory
RCRA -	Resource Conservation and Recovery Act
SARA -	Superfund Amendments and Reauthorization Act
SDWA -	Safe Drinking Water Act
SOC -	Synthetic Organic Chemicals
SSA -	Sole Source Aquifer
SWCD -	Soil and Water Conservation District
TMDL-	Total Maximum Daily Load
TOT -	Time of Travel
UST -	Underground Storage Tank
VOC -	Volatile Organic Chemicals
WHPA -	Wellhead Protection Area
WHPP -	Wellhead Protection Program

APPENDIX C

APPLICABLE RULES AND REGULATIONS

Emergency Planning and Community Right to Know Regulations

OAC Chapters 3750-20, 3750-30, 3750-60

OAC Chapter 3745-100

Emergency Panning and Community Right to Know Act (SARA Title III)

Xenia Township Resolution, Section 600

Transportation Regulations

49 CFR Parts 171-174, 177, 191-192, 194

OAC Chapter 1745-53

Above Ground Storage Tank Regulations

OAC Chapter 1301:7-7-28

OAC Chapter 3745-55-90/993

OSHA 29 CFR 1926.152

OAC Chapters 37-20; 3750-25; 3750-30

Cedarville Township Resolution, Article 5, Section 512

Underground Storage Tank Regulations

OAC Chapters 1301:7-9; 1301:7-7-13; 1301:7-7-28

OAC Chapter 3745-55-90/993

29 CFR 1926.152

Wastewater and Storm Water control Regulations

OAC Chapters 3745-33; 3745-38

Village Ordinances, Chapters 1278.05; 1452

Floodplain Regulations

Miami Township Resolution, Section 12

Xenia Township Resolution, F-1:200; F-1:413

Cedarville Township Resolution, Article 4, Section 414

Abandoned Wells Regulations

OAC Chapter 3701-28

OAC Chapter 3745-9-10

Village Ordinances, Chapter 1048

APPLICABLE RULES AND REGULATIONS (continued)

Wastewater Treatment Plants Regulations

OAC Chapter 3745-33
OAC Chapters 1301:7-9; 1301:7-7-28
OSHA 29 CFR Parts 1910.1200; 1926.152
OAC Chapters 3750-20; 3750-25; 3750-30

Unregulated Waste Regulated Sites Regulations

OSHA 29 CFR 1926.65
OAC Chapters 3745-27; 3745-30; 3745-38; 3745-400-09
CWA #503
Miami Township Resolution, Section 5:14
Cedarville Township Resolution, Article 5, Section 512
Xenia Township Resolution

Agricultural Chemical Application Regulations

ORC chapter 921
OAC Chapter 901:5-11

Sites With Pesticides, Bulk Fertilizer and Other Chemicals Regulations

OAC Chapters 3745-51; 3745-52
OSHA 29 CFR Parts 1910.1200; 1926.152
OAC Chapters 3750-20; 3750-25; 3750-30; 3745-100
OAC Chapters 1301:7-9; 1301:7-7-28; 1301:7-9
OAC Chapter 901:5-11

Pesticide/Herbicide Management Regulations

OAC Chapter 901:5-11
ORC Chapter 921
Village Ordinances, Chapter 660.14

Septic System Regulations

OAC Chapter 3701-29

APPLICABLE RULES AND REGULATIONS (continued)

Underground Dry Injection Wells control Regulations

OAC Chapter 3745-34

40 CFR Parts 144 and 146

Private Water Systems

OAC Chapter 3701-28

APPENDIX D

GLOSSARY

1. Bedrock -consolidated rock formations. Mainly limestone, dolomite, and shale in southwest Ohio.
2. Best management practice (BMP) - accepted strategy designed to reduce or eliminate potential harmful impacts on the environment.
3. Buried valley aquifer - ancient bedrock valley filled with glacial sand and gravel deposits that store and transmit significant quantities of ground water.
4. Capture zone - the total aquifer area that contributes ground water to a well or well field.
5. Dry wells - wells or subsurface structures designed to allow storm water and other fluid wastes to infiltrate into the ground. Also called drainage wells. Dry wells are regulated as Class V Injection wells by the Ohio EPA.
6. Floodplain - the area adjacent to a river or stream subject to periodic flooding, generally restricted for habitation and construction.
7. Ground water - water that fills the spaces between soil and rocks underground.
8. Hazardous waste - any waste primarily exhibiting hazardous characteristics of ignitability, toxicity, corrosivity, and/or reactivity.
9. Inner Management Zone (IMZ) - Ohio EPA term denoting the protection area around a well or well field associated with a one year time-of-travel.
10. Monitoring wells - wells that are used to collect groundwater samples for analysis.
11. Nonpoint sources - sources of impairment to water quality that are diffuse and spread over a large area such as runoff from parking lots, lawns, and croplands.
12. Primary containment - first level of containment , such as a container or storage device which comes into immediate contact on its inner surface with a regulated substance.
13. Point sources - sources of impairment to water quality that can be traced to a specific origin such as a pipe or leaking storage tank.
14. Production wells - wells that pump groundwater for consumer use.
15. Protection area delineation - the determination of an approximate protection area surrounding a well field based on hydrogeologic mapping and/or modelling.

GLOSSARY (continued)

16. Recharge area - the area above an aquifer that supplies water to that aquifer via downward seepage and infiltration.

17. Secondary containment - additional containment designed to contain a release from a primary containment unit thereby preventing escape of fluids into or onto the ground.

18. Septic system - an on-site waste system designed to breakdown and dispose of human waste

19. Sole Source Aquifer (SSA) - an aquifer designated by the U.S. EPA as a sole or principal source of drinking water. Also recognized in State of Ohio environmental regulations.

20. Storm sewer - a system of pipes to carry storm water runoff for treatment or disposal.

21. Surface water - water found in rivers, streams, lakes, and ponds.

22. Till – a low permeability mixture of sand, gravel, boulders, and clay. Generally impedes the flow of ground water.

23. Time-of-travel (TOT) - the time required for a water particle to travel through an aquifer from a fixed distance to a well.

24. Upgradient - the direction from which groundwater is flowing to a well. Analogous to “upstream” in a river.

25. Upland Aquifer – a hydrogeologic setting consisting of bedrock aquifers overlain by mixed glacial deposits. Generally located higher than and adjacent to buried valleys.

26. Wellhead Protection Area (WHPA) - Ohio EPA term denoting the protection area around a well or well field associated with a five-year time-of-travel.