



**WHPA**

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## **Wellhead Protection Plan**

**Indiana–American Water Company  
Richmond Operations**

**PWSID: 5289012**

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**Prepared by**

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## **Chapter 1 – Introduction**

The community drinking water supply in Richmond, Indiana comes from both surface and groundwater. Over the past several years the city of Richmond has taken steps to protect groundwater quality and quantity in the area by passing a well field protection ordinance. The Indiana wellhead protection rule (327 IAC 8–4.1) defines the Richmond Operation of Indiana–American Water Company, Inc. (PWSID: 5289012) as a medium–sized community public water supply system (CPWSS). The city is located in Wayne County, Indiana within a few miles of the Ohio state line. The system served a population of approximately 42,325 in 1999 in and around the city of Richmond.

Indiana–American is required to submit a wellhead protection plan (WHPP) that satisfies the requirements of 327 IAC 8–4.1 for its Richmond Operations by March 28, 2001.

### **Federal and State Regulations**

The 1986 amendments to the Federal Safe Water Drinking Act (Title II, Section 205, Subsection 1428) mandate the creation of a state wellhead protection program in Indiana. In response, the Indiana Water Pollution Control Board adopted the Indiana wellhead protection rule, effective March 28, 1997. The rule is administered by the Indiana Department of Environmental Management.

The Indiana wellhead protection program recognizes that the quality of groundwater can be threatened by land uses and activities above the well fields. Examples of these land uses and activities are waste disposal, chemical spills, leaking storage tanks, agricultural fertilizers, faulty septic systems and storage of road de–icing chemicals. The program recognizes that pollution prevention is much less expensive than cleanup. That is, the cost of managing land use activities to protect the quality of groundwater has been shown to be less than the cost of remedial actions needed to clean up polluted or contaminated groundwater. The local program in Richmond is designed to protect the quality of the groundwater by managing activities on the land surface.

The Indiana wellhead protection rule requires that each CPWSS develop local wellhead protection plans that consist of seven basic steps or components:

1. Form a local planning team.
2. Delineate the wellhead protection area.
3. Inventory potential sources of contamination.
4. Create a management plan.
5. Create a contingency plan.

6. Initiate a public education program.
7. Initiate a public participation program.

The rule establishes deadlines for the submittal of Phase I documentation based on system size. Medium-sized systems must submit complete plans by March 28, 2001. Phase II documentation addresses implementation activities. Medium-sized systems must submit this documentation within seven years of plan approval.

### **IAWC Richmond Wellhead Protection Program**

To assist in facilitating the process and in preparation of the program documents, Indiana-American Water Company secured the services of two consulting firms. Panterra Corporation prepared the delineation of the wellhead protection area and the inventory of potential contaminant sources. The wellhead protection area delineation report and the potential contaminant source inventory (PCSI) report were delivered to IDEM offices last year for review under the WHP rule. The public participation process that lead to the wellhead protection plan was facilitated by Wittman Hydro Planning Associates, Incorporated (WHPA, Inc.). WHPA, Inc. worked with the community and the company as it considered each required aspect of wellhead protection planning and then prepared this plan for submittal to the Indiana Department of Environmental Management.

### **Organization of the Plan**

The remainder of this report documents the elements of the wellhead protection program for the Indiana-American Water Company Richmond Operations. It is designed with two readers in mind, the regulatory reviewers at IDEM and the consumer public in Richmond who are interested in protecting their drinking water. Each chapter has a specific objective.

Chapter 2 provides a brief overview of the Richmond water supply system.

Chapter 3 documents the formation and activities of the local planning team (LPT).

Chapter 4 is an overview of the water company operations that focuses on that part of the drinking water source that comes from various groundwater supplies. This chapter is meant to provide an overview of the wellhead protection area delineation that was conducted by Panterra Corporation.

Chapter 5 is an overview of the PCSI report developed by Panterra. This chapter is a summary of the initial potential contaminant source inventory and the subsequent review of that work by the local planning team. The PCSI was amended by the LPT during the planning phase of this work.

Chapters 6 through 9 present the required management plan, sanitary setback management plan, contingency plan, and public education and outreach plan that were designed and agreed to by the Richmond local planning team.

Chapter 10 summarizes the recommended actions that were identified by the LPT in the preceding subplans (Chapters 6–9). This chapter presents a distilled summary of the outcome of the planning effort, including the recommended action, the party responsible for implementing this element of the plan, and an estimate of the time frame for implementing the various recommendations.

## Chapter 2 – Richmond Operations CPWSS Overview

The Richmond Operations of the Indiana–American Water Company, Inc., provides water to the community of Richmond, Indiana. The system is defined by the wellhead protection rule as a medium–sized public water supply system. The unique character of the system comes from its location on the far eastern side of the state, immediately adjacent to the Ohio state line, and use of its springs and infiltration galleries. The system is the largest community water supply system in Wayne County, Indiana, serving a population of approximately 42,500.

### Supply

The Richmond water utility pumps groundwater from six wells, five infiltration galleries, and two springs at an average rate of 3.3 million gallons per day (MGD). A summary of the Richmond water supply is presented in more detail in Appendix A.

Based on the delineation report prepared by Panterra Corporation, the three wells located in the G–street well field produced an average of 1.2 MGD. The three wells located in the Cooper–Kelly well field produce an average of 0.33 MGD. The infiltration galleries and two springs produced a combined average of 1.8MGD. Water from the G–Street well field is pumped to the South Fourth Street Treatment Plant, and water from the Cooper–Kelly well field, the infiltration galleries, and springs is pumped to the Main Station Treatment Plant.

### Verification of CPWSS Production Well Compliance

Tables 1 and 2 summarize of construction dates for the IAWC wells, infiltration galleries and springs. The well construction rule, 310 IAC 16, adopted under IC 25–39–1.5, requires construction permits for wells constructed after January 1, 1988. None of the wells or groundwater production facilities for Richmond were constructed after the effective date of the well construction rule.

*Table 1 – IAWC high capacity well data.*

Well Number	Date Constructed	Location	Diameter	Depth	1996 Average Withdrawal
1	unknown	Cooper–Kelly Well Field	unknown		42 gpm
2	unknown	Cooper–Kelly Well Field	25"	33.1'	42 gpm
3	unknown	Cooper–Kelly Well Field	unknown	unknown	146 gpm
9	1954	G–Street Well Field	18"	59'	645 gpm
10	1954	G–Street Well Field	16"	60'	29 gpm
11	1956	G–Street Well Field	18"	62'	163 gpm

*Table 2 – Other groundwater producing facilities data.*

Name	Construction Date	Average Withdrawal
Gorman Gallery	1885	295 gpm
Hill Gallery	1887	295 gpm
White Gallery	1888	295 gpm
Comer Gallery	Prior to 1885	228 gpm
Comer Spring	Prior to 1885	83 gpm
Gravel Spring	Prior to 1885	83 gpm

**Monitoring**

Indiana–American exceeds the monitoring requirements set by IDEM. Appendix B contains the standard monitoring framework for the Richmond CPWSS as well as a summary of raw water quality from the groundwater sources during the past year.

## **Chapter 3 – Local Planning Team**

While wellhead protection is mandated by the federal government and the state of Indiana, the protection of groundwater depends on the actions of all who live, work, recreate and travel through the areas in and around the public water supply well fields. The Indiana wellhead protection rule requires the participation of a local planning team (LPT) in the preparation of a WHPP. The LPT must include representation of stakeholders – people and parties – that may be affected by development and implementation of the WHPP.

A number of stakeholders have an important interest in the protection of local groundwater resources. Participation of local government planning and legislative bodies is crucial because any new legislation will need the support and action of these agencies. Assistance from area emergency responders is necessary to develop an effective contingency plan. Residents, businesses, industries and agriculture interest located in the area are needed to assist in development of a program that is responsive to and accepted by the community. Customers of the CPWSS also are important stakeholders because they depend on a safe groundwater supply.

The membership of the LPT is particularly important in Richmond because Indiana–American, as an investor–owned utility, does not have direct authority to enact and enforce many of the tools commonly used to protect groundwater. In this case, the groundwater production facilities are located within the planning and zoning jurisdiction of Richmond. This means that the city and Wayne County may have enforcement authority depending upon the tools chosen. As such, it is critical that these entities and others who will be responsible for implementation participate in developing the management plan.

Indiana–American sent invitations to prospective LPT members in June 2000. A mailing list of prospective LPT members in Appendix C. Table 3 lists local planning team members.

The LPT convened on June 29th, 2000 at the Indiana–American Water Company offices in Richmond. The LPT met nine times between June 2000 and March 2001. Subcommittees were formed and met in addition to the plenary meetings. A staff member of Wittman Hydro Planning Associates, Inc., facilitated each of the meetings of the LPT. Table 4 describes briefly the topics discussed at each meeting. Complete minutes appear in Appendix D.

*Table 3 – Local planning team members and affiliations.*

<b>Member</b>	<b>Organization</b>
Peggy Branstrator	SPUR, CAP
Jon Branstrator	Earlham College
Craig Markley	Wayne County Health Department
Terry Bell	IAWC
Ed Pollock	SPUR
Bill Frazier	SPUR
Gene Berry	Soil and Water Conservation District
Mary Hagerman	Earlham College
Mike Allen	Richmond Fire Department
Fred Griffin	Wayne County EMA
George Sowers	Attorney
Larry Middleton	Citizen
Carolyn Blakey	Citizen
Dick Bodiker	Indiana State Representative
Lynn Johnstone	Urban Enterprise Zone, SPUR
Bob Goodwin	Richmond City Planner
Don Burger	Citizen*
Dale Leising	Citizen*
Kirby Hiller	Citizen*
Rebecca Savage	Citizen*
Bob Wiwi	City of Richmond, Director of Public Works / Engineer
Connie Aschliman	Citizen*
Shirley Rodgers	Resource Inventory Council
Richard Roeper	Indiana East University
Larry Carlson	City of Richmond – Public Works, Engineering Department

*\*Affected parties*

## Chapter 4 – Wellhead Protection Area Delineation

Wellhead protection areas are defined by the USEPA as "the surface and subsurface area surrounding a water well or well field, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or well field" (Safe Drinking Water Act Amendments, 1986). The Indiana wellhead protection rule specifies use of the five-year time of travel (TOT) as the wellhead protection area for all systems that produce over 100,000 gpd. The purpose of the wellhead protection area delineation is to determine the five-year TOT boundary for the CPWSS well field. The five-year TOT boundary encompasses the area that will contribute groundwater to the well fields within five years or less.

*Obtain this document* → [Panterra Corporation prepared the report that is summarized below. Their efforts involved gathering and evaluating data, preparing geologic maps and cross sections, developing a conceptual hydrogeologic model, constructing a computer-based groundwater flow model, and defining the five-year TOT boundaries. A complete copy of the report appears in Appendix E.

### Area of interest

The regional study area is located in Wayne County in eastern Indiana along the East Fork of the Whitewater River near the Ohio border. According to Panterra Corporation, the CPWSS water supply wells pump water from the Whitewater Valley Aquifer System, which is composed of valley-train sand and gravel outwash deposits ranging in thickness from 10 to 100 feet.

### Delineation

Groundwater flow through the buried sand and gravel aquifer at the well fields and infiltration galleries was simulated using the popular finite-difference model, MODFLOW. These simulations provided five-year TOT boundaries for the groundwater production source areas (Figures 1 and 2). Computer simulations resulting in a five-year TOT for these areas are based on the groundwater flow direction and transmissivity of the aquifer.

### Wellhead Protection Management Area

The LPT considered the delineated capture zones to be difficult to apply to management given their irregular shape. Consequently, a subcommittee of the local planning team defined two larger management areas that included the delineated capture zones. The larger management areas are shown in Figure 3.

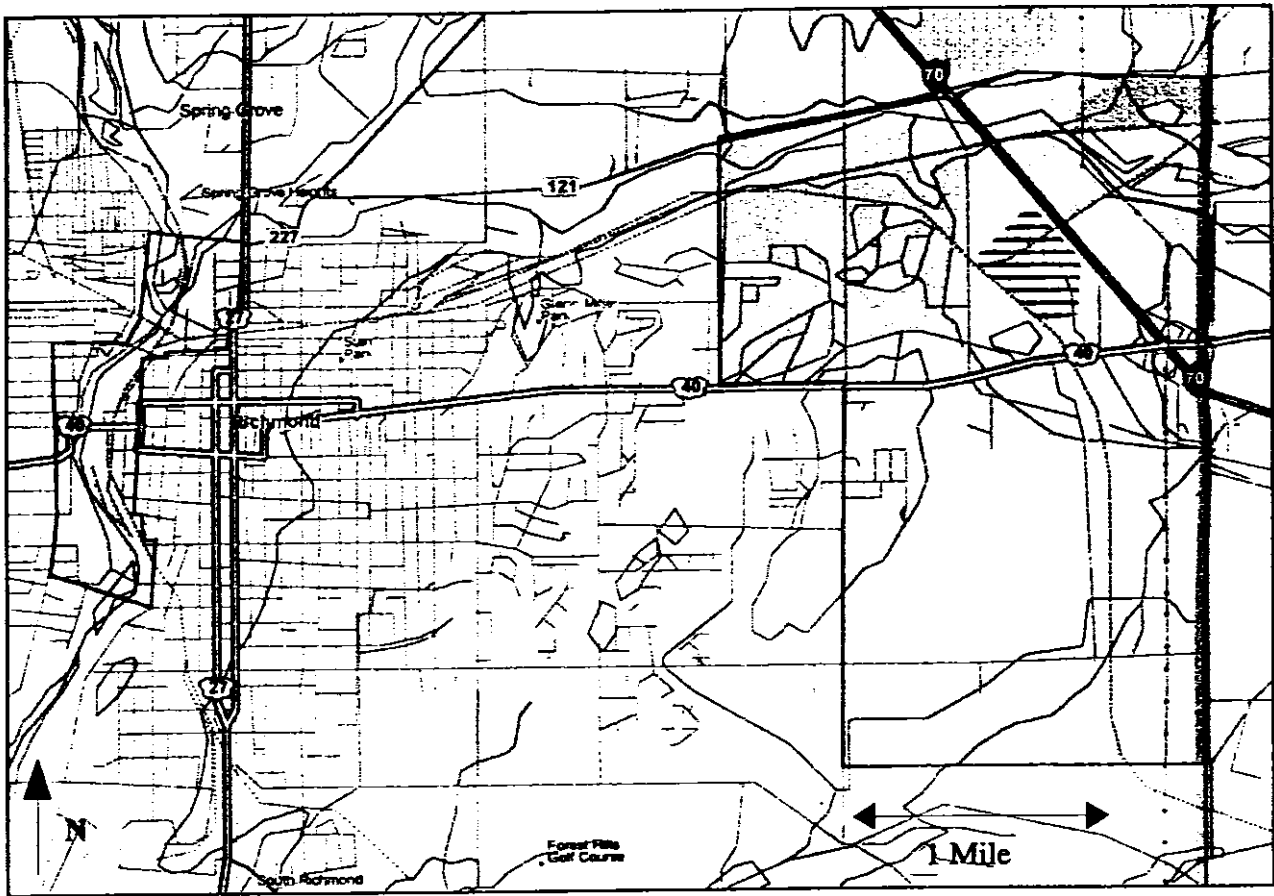


Figure 3 – Proposed wellhead protection management areas for the Richmond Community Public Water Supply System (shaded gray).



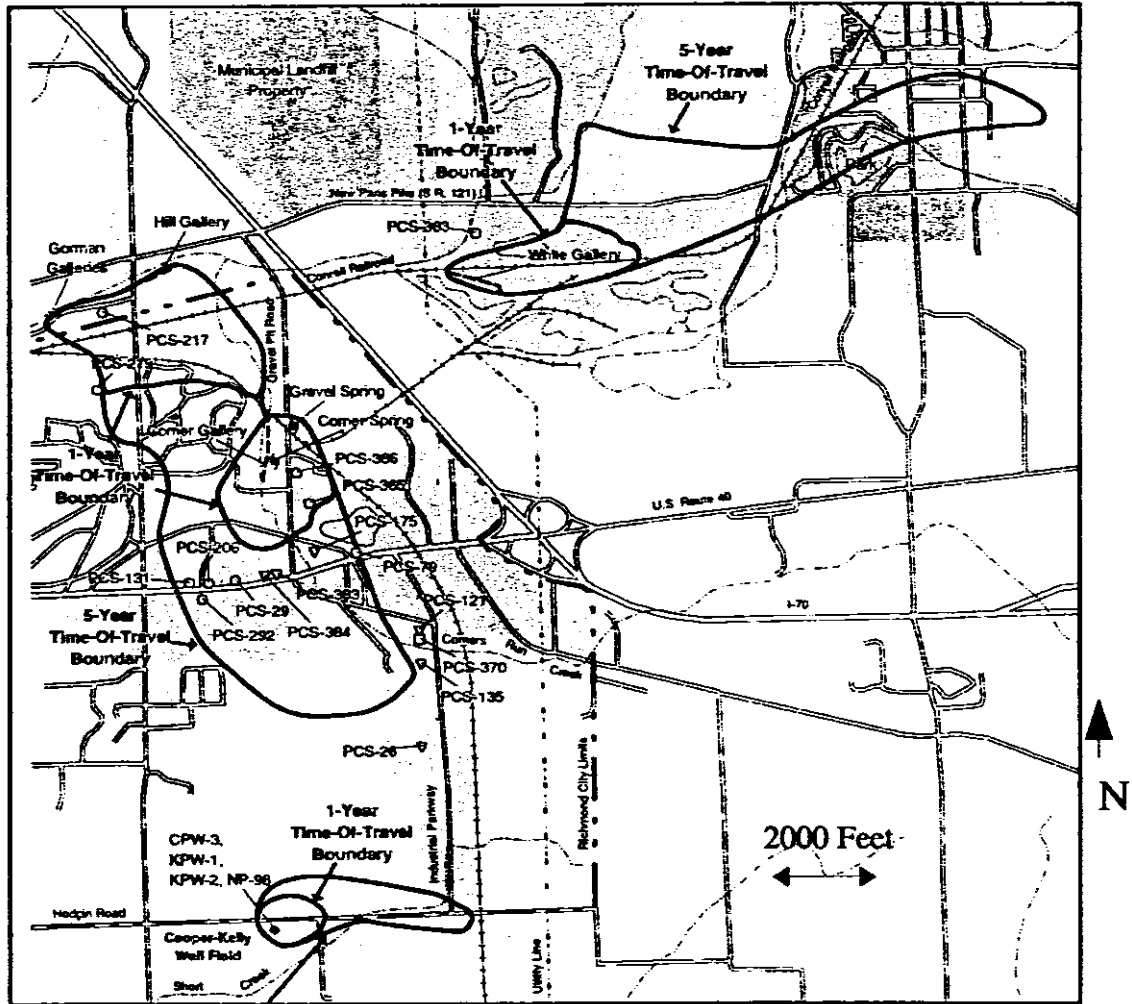


Figure 2 – Cooper-Kelly well field, Gorman, Comer, White galleries and Comer and Gravel springs delineated area.

## Chapter 5 – Potential Contaminant Source Inventory

The wellhead protection rule requires that an inventory of potential sources of contamination within the wellhead protection area be provided in the WHPP. The list must contain all existing facilities, sites, practices, and activities for both regulated and unregulated potential sources of contamination and facilities that handle, use, manufacture, store, or treat compounds that may be dangerous to the water supply if released into the subsurface.

Panterra Corporation prepared an initial potential contaminant source inventory (PCSI) based on a variety of sources, including:

1. Public record review of state and federal agencies.
2. Windshield survey of the delineated WHP Areas.
3. Communications with Indiana–American Water Company personnel.

The Panterra report appears in Appendix F.

### Source Categories

Using the Panterra report as a starting point, the LPT resurveyed the area, correcting and updating PCSI information. The revised inventory is included in Appendix G. Based upon the potential contaminant source inventory and subcommittee review, the LPT identified the following categories of potential contaminant sources for the wellhead protection area shown in Chapter 5:

- Residential uses
- Agricultural uses
- Commercial uses (including gas station)
- Industrial uses
- Transportation routes
- Surface water runoff (through the infiltration galleries)

Following identification of these categories, the team began discussions about how to address the risk posed by various categories of sources and tools appropriate for management of the wellhead protection area. The following text provides a summary of group discussions regarding each category.

### Residential Uses

The two wellhead protection areas include a number of homes. The LPT identified lawn chemicals (insecticides and herbicides), household hazardous waste, septic systems, and abandoned wells as potential risks.

Preferred management tools: Establish septic inspection program for existing systems within the Wayne County Health Department, notification/education of owners, renters and potential contaminant sources, including information about pesticide use, and household hazardous waste collection.

### **Agricultural Uses**

The wellhead protection areas contain row crops (corn and soybeans) and some livestock. The use of pesticides and fertilizer and the storage of fuel oil present the greatest risks associated with this use. The LPT considers this use to be low risk generally.

Preferred management tools: existing regulations, notification of owners and potential contaminant sources, educational seminars about wellhead protection, the need for secondary containment for above-ground storage tanks, best management practices for mitigating non-point source pollution, and contingency planning, emergency response, and spill recovery.

### **Commercial Uses**

There are a variety of auto-related commercial uses within the wellhead protection areas, including gasoline station, automobile dealers, and repair shops. The medium risk associated with the auto-related establishments is tied to the presence of solvents, oil, and gasoline. Other commercial uses include retail businesses, a metal salvaging and recycling facility, and several self-storage establishments. These facilities are considered by the LPT to be generally low-to-medium risk.

Preferred management tools: existing regulations and notification/education of owners and potential contaminant sources.

### **Industrial Uses**

A variety of industrial uses are located within the wellhead protection areas. The risk associated with these types of uses escalates with increased chemical use. The LPT is concerned that there is not enough information available regarding these sources.

Preferred management tools: existing regulations, overlay zoning, notification/education of potential contaminant sources, contingency planning and emergency response that incorporates the boundaries of the wellhead protection areas, emergency response, and spill recovery, and establishment of a systematic information collection system for potential contaminant sources.

### **Transportation Routes**

The Richmond wellhead protection areas include U.S 40, U.S. 27, I-70, SR 121 and two rail lines. Transportation corridors pose a high risk to the groundwater because of the danger of spills and accidents. The intensity of industrial uses also makes it likely that hazardous chemicals are transported over local streets within these areas.

Preferred management tools: existing regulations, notification/education of potential contaminant sources, contingency planning that incorporates the boundaries of the wellhead protection areas, emergency response, and spill recovery, and training for emergency response personnel. The LPT also recommends better enforcement of illegal dumping restrictions by Richmond and Wayne County.

#### **Surface Water Runoff**

Surface water runoff is of particular concern in the WHPA that feeds the infiltration galleries. The Richmond Sanitary District Landfill is located adjacent to the management area. Several inert cells are located within it.

Preferred management tools: existing regulations, ongoing water quality monitoring, and establishment of monitoring wells at landfill sites.

## Chapter 6 – Management Plan

The Indiana wellhead protection rule (327 IAC 8–4.1) requires that Indiana–American Water Company prepare a management plan to protect the sanitary setback area and any wellhead protection area(s) designated consistent with the requirements of the rule.

The remainder of this chapter presents information regarding the LPT’s substantive recommendations for management of the wellhead protection area and other required management provisions.

### Management Recommendations

The LPT chose a set of regulatory and non–regulatory tools for management. Preferred tools include existing federal, state, and local regulations, contingency planning, ongoing water quality monitoring, and public outreach and education. LPT recommendations for each tool also are provided below.

#### Existing State and Local Regulations

The LPT recognizes that industrial and other activities of concern within the wellhead protection area are addressed by existing regulations. These regulations are extremely important to the continued protection of the CPWSS from contamination.

The City of Richmond passed Ordinance No. 4–1994 entitled *A General Ordinance to Protect the Southeast Aquifer* on May 15, 1995 and Revised Ordinance No. 33–1999 entitled *A General Ordinance Amending Chapter 154 of the City Code Regarding Wellhead/Aquifer Protection District* on June 8, 1999 both of which are contained in Appendix H.

#### Contingency Planning, Emergency Management, and Spill Recovery

Chapter 9 documents the contingency plan for the Indiana American Water Company operations in Richmond. The plan combines existing local emergency management practices established by local emergency responders and by the Indiana–American Water Company. The LPT recommended that Indiana American Water Company be added to the existing protocol for notification in the event of a hazardous release and collaborate with local emergency response agencies to provide training focused on spill events within the area encompassing the wellhead protection area.

#### Water Quality Monitoring and Treatment

The LPT recommends that Indiana American Water Company continue their current protocol for monitoring and pursue treatment options, if warranted, and the installation of monitoring wells near high potential risk sites within the wellhead protection areas.

#### Outreach/Notification

The LPT recommends a series of materials and activities to address general public awareness and education of owners and potential contaminant sources that fall within the categories of

contaminant sources identified. Recommendations regarding specific elements and strategy are provided in Chapter 8.

### **Septic Inspection**

The LPT recommends that the Wayne County Health Department establish an inspection and education program to encourage the regular maintenance of septic systems.

### **Household Hazardous Waste Program**

The LPT recommends that the county establish a household hazardous waste collection program to serve residents living outside of the Richmond Sanitary District. Richmond currently has its own household hazardous waste program.

### **Overlay Zoning**

The LPT recommends expanding the current Richmond wellhead protection ordinance to the expanded management area established by the LPT for the eastern wellhead protection area and that the city expand the ordinance to include the gorge wellhead protection area. A copy of the current ordinance appears in Appendix I.

### **Penalties for Dumping**

The LPT recommends strengthening the current city and county regulations and enforcement on prohibitions against dumping.

### **Continued Activity by Local Planning Team/Richmond Advisory Committee**

The LPT recommends continuing its activities following submittal of the Wellhead Protection Program. At a minimum the LPT recommends an annual meeting to inform members of progress and modify the plan if necessary. The LPT also recommends that the Richmond Technical Committee established within the wellhead protection ordinance be reinigorated and cooperate with the LPT. Several members of the technical advisory committee also serve on the LPT.

### **Coordination with Adjacent Ohio Counties**

Portions of the management area extend into Ohio, including a portion of the 5-year TOT for the springs and some of the surface water that feeds the infiltration galleries. The LPT recommends that Indiana-American coordinate efforts with officials in Darke and Preble Counties (Ohio). In the short term, monitoring should continue to address these portions of the management area.

### **Required Management Provisions**

This section briefly addresses provisions required as part of the management plan outlined in 327 IAC 8-4.1-8(4) of the wellhead protection rule. Table 5 identifies the location of elements addressed within other sections of this document. In cases when the requirements do not fit easily within the structure of the plan, a discussion is provided below.

*Table 5 -Location of the plan elements required by the WHP rule.*

<b>Element</b>	<b>Location</b>
Plan to manage sanitary setback area	Chapter 7
Verification that CPWSS wells comply with state construction standards and permit requirements	Chapter 2
Copy of standardized monitoring framework	Chapter 2, Appendix B
Description of how property owners, mineral owners, and leaseholders of record will be notified that they are located in the WHPA	Chapter 9

### **Management and monitoring of potential sources of contamination**

Indiana-American will maintain an inventory of potential sources of contamination by building and developing an accessible database of regulated sites, reported releases, and changes in the facilities in the delineated WHPA. The database will incorporate any information provided by the local emergency planning committee (LEPC) and other local entities (Wayne County Health Department, Richmond and Wayne Planning Departments, etc.) and will be used as a resource to inform the community of the current status of the distribution of potential sources of contamination (regulated and unregulated) near the public water supply. The LPT recommends that particular attention be given to gathering ongoing information about the industrial and commercial potential contaminant sources.

IAWC has established a comprehensive program for monitoring water chemistry parameters throughout the system. IAWC monitors for various volatile organic contaminants, inorganic contaminants, nitrates, and synthetic organic contaminants and submits data to IDEM on various compliance schedules. These water quality data will be reviewed on an ongoing basis in light of the inventory of potential contaminants identified for the potential sources within the WHPA.

### **Identification of Abandoned Wells**

Indiana-American will contact the Indiana Department of Natural Resources to request a listing of registered abandoned wells within the WHPA. The LPT will ask for assistance from the Wayne County Health Department in locating abandoned wells and include education about the potential risk of improperly abandoning wells. The handouts and pamphlets may include materials (or references to existing materials) that could assist residents in locating professional contacts.

The LPT recommends that public outreach and educational materials address abandoned wells. *Plugging Abandoned Wells - A Landowners Guide* (Appendix J), published by the Purdue University Cooperative Extension Services and 310 IAC 16-10-2 (Appendix K), can be utilized as the basis for development of these materials.

### **Disposition of Pesticides**

Indiana-American Water Company will reference IC 15.3-3-3.5 and 3.6 (Appendix L) and the risk posed to groundwater by improper pesticide use in its notification communications with property owners, mineral owners, leaseholders, and potential contaminant sources as required under the wellhead protection rule. The letter will direct questions regarding this statute, and its interpretation and administration to the Indiana Office of the State Chemist and Seed Commissioner.

## **Chapter 7 – Sanitary Setback Management Plan**

The wellhead protection rule requires each wellhead protection plan include a specific plan to manage the sanitary setback area. The plan must contain a description of measures to manage the area(s), a description of measures to prohibit the storage and mixing of chemicals other than those regulated by the Pesticide Review Board, a description of security provisions to prevent unauthorized access to the wellhead, and best management practices for transportation routes.

### **Management of Sanitary Setback Area**

The wellhead protection rule limits activities within a 200 ft. sanitary setback. Activities excluded and/or limited by the existing sanitary setback are other water supply wells, sanitary and storm sewers, and roadways, (including paved and unpaved surfaces accessible to vehicles). Wells and well fields that were constructed prior to the rule are not subject to these restrictions but, as such, require careful management. The groundwater supply for the city of Richmond comes from older wells, springs, and a set of infiltration galleries. These were all put into operation prior to the turn of the century. Since then, the water supply has been supplemented by the surface water reservoir.

### **Security of wellheads**

The G street wells are housed in a locked building. Land use near this well field includes floodplain, vacant areas and greenway. The Cooper–Kelly wells are contained within a fenced area. Land use includes agricultural use and vacant land.

The security of the infiltration galleries and springs is very difficult to determine in part because there is some uncertainty about the location of the sources. It was the consensus of the LPT that Indiana–American should work to determine the location of the infiltration galleries and the spring source areas. Once identified, Indiana–American should pursue conservation easements or some other legal arrangement that will assure future access and limit incompatible land use.

## **Chapter 8 – Contingency Plan**

The Indiana wellhead protection rule requires that a contingency plan be created that describes how the CPWSS will provide safe drinking water to the public during and after emergency contamination events. The contingency plan must outline plans to respond to releases that pose an immediate risk to the public water supply and also identify alternate sources of water that can be used in emergency situations. The rule seeks to ensure the necessary involvements of the water utility in emergency response actions and requires the compilation of contact information for emergency response agencies that will be contacted in the event of a water supply emergency.

### **Local Emergency Response Resources**

#### **Local Government**

There are several emergency response authorities that operate in the Indiana–American, Richmond wellhead protection management area. Each is engaged by calling a centralized dispatch responsible for contacting the appropriate organizations. Emergency response to hazardous material spills is generally delegated to the Richmond and North Western fire departments with support provided by local law enforcement, county emergency management and other agencies as required. An organized hazardous materials response team (HMRT) is not currently available from either fire department serving the WHPA. Fire department responders are trained to the operations level and have the ability to assess the situation, identify the source of the spill, isolate the area, confine the released material and call for specialized assistance. Local emergency response agencies typically rely on the party responsible for a spill to contact an emergency response/clean-up contractor.

The standard operating guidelines of the Richmond Fire Department and the Northwest Fire Department (located in New Paris, Ohio) will include a map of the WHPA. In addition, the local emergency planning committees (LEPC) of Wayne County, Indiana, and Preble County, Ohio, are in the process of revising their respective plans to coordinate the response to chemical releases and specialized training for local, county and state emergency responders. These plans rely on the capabilities of an integrated team (under an incident command system) responding to chemical releases that may threaten the Indiana–American water supply.

Both the Wayne County and Preble County LEPCs maintain emergency response database from Tier Two Hazardous Chemical Inventory reports and material safety data sheets filed by local businesses. Emergency responders, including 911 centers, fire departments and Emergency Management Agency personnel, have direct access to this database. The database provides information each facility reporting chemical inventories and includes specific chemical information, emergency contacts, storage container types and locations, and approximate amounts. This information can be provided by the dispatcher to the

emergency responders or accessed directly on their computers while enroute to the location of the release. The databases are updated annually.

### **Indiana-American**

Indiana-American Water Company has a corporate emergency action plan that includes spill response and emergency water treatment. The IAWC Emergency Action Plan (EAP) (Appendix M) was designed to satisfy the requirements of 29 CFR 1910, 29 CFR 1926, and IAC 327 2-6.1. As part of an American Water Works Company, Indiana-American also has a variety of resources available for water emergencies including portable treatment systems.

### **Recommendations**

The contingency plan describes the different response plans and supply alternatives that are designed to assure a safe water supply in the event of a spill. During the course of the planning process the LPT became familiar with Richmond, and Wayne and Preble County's emergency response capabilities (Appendix N). The LPT discussed the need to communicate to the local emergency response personnel the special risks associated with toxic material releases in the wellhead protection area. The LPT consulted with members of the local fire department, the county emergency management agency, the county health department, and the Wayne County LEPC. Committee members made recommendations regarding transfer of delineation maps to emergency response personnel, integrating the drinking water contingency planning into the LEPC process, and monitoring during any threatening release. The committee considered a range of hazardous material releases including those that occur during transportation. That threat is posed by the close proximity of major highways (US 40, and I-70), and a Norfolk Southern rail line in the capture zones.

The following recommendations were designed to satisfy the wellhead protection rule and protect the water supply.

### **Plan to Train Responders**

Emergency response personnel need to know what areas are in the wellhead protection area and who should be contacted at the water company about any release that occurs within that area. Richmond and Northwest fire departments' standard operating procedures (SOPs) for spill response have been revised to include the wellhead protection area location map and a local IAWC phone number. In addition, LEPC and emergency management training will take place as the organizations develop the planning infrastructure to accommodate new responsibilities. The LPT recommends that emergency responders hold a minimum of one annual training session that addresses a spill event within the wellhead protection area. These drills are needed to ensure that local response personnel understand the extra precautions required to avoid contamination of the aquifer in the area of the well heads. It is recommended that the training include both a classroom component and a field component to orient the hazardous materials response team to the particular shape of the WHPA. Annual drills of the emergency response teams should include one scenario of a release within the capture zones of the public drinking water wells. Indiana-American will contact each of the

### Descriptions of Emergency Response to Leaks and Spills

The Wayne County, Indiana, and Preble County, Ohio, hazardous material response plans will be revised to include appropriate references to wellhead protection, Richmond WHPA locations and specific response procedures should a spill threaten these areas.

### List of Information to be Provided to Emergency Responders

Indiana–American is required to provide emergency responders with information showing the wellhead protection area and a listing of 24–hour contacts (Table 5). As mentioned above the location of WHPA boundaries and contact information for Indiana–American have been provided to the Richmond and Northwest fire departments. The departments have integrated these data into their standard operating procedures for spill response.

In addition to the Richmond and Northwest fire departments (New Paris, Ohio), Indiana–American will make these same data available to the local dispatch centers and to the local emergency planning committee. The boundaries will be added to the computer–aided dispatch system currently utilized in the county and the CAMEO mapping program maintained by the LEPC.

Table 6 – 24-hour emergency contact information.

Contact	Phone Numbers
Indiana American Water Company – Dave Little, Operations Mgr.	765-962-0470 Ext 223 765-914-5682 Mobile 888-368-1652 Pager
Indiana American Water Company – Terry Bell	765-962-0470 Ext. 225 317-908-3327 Mobile 800-730-7243 Pager
Indiana American Water Company – Steve Pappas– Dir. Of Loss Control	765-962-0470 317-885-2432 888-796-8664 Pager
<b>Emergency Spill Response</b>	
IDEM, Office of Emergency Response	317-233-7745 or 888-233-SPIL
IDEM, Drinking Water Branch	317-308-3308
Ohio EPA, Division of Emergency Response	614-224-0946 or 800-282-9378
Heritage Environmental Services, LLC	317-243-0811 or 800-436-8778
Spill Recovery of Indiana	317-291-3972 or 800-421-7764
Specialty Systems Hazardous Waste, Inc.	317-269-3626
Environmental Remediation Services (ERS) Inc.	219-489-7062
National Response Center	800-424-8802
Norfolk & Southern Railroad	800-453-2530
Indiana Department Of Transportation (INDOT) – Greenfield	317-462-7751
Ohio Department Of Transportation (ODOT)	614-466-7171
<b>Police/ 911 Centers</b>	
<b>Indiana</b>	
Wayne County 911 Center	765-973-9355 or 765-973-9523
Wayne County Sheriff Department	911 or 765-973-9393
Richmond Police Department	911 or 765-983-7247
Indiana State Police (Connersville)	765-825-2115 or 800-437-7159
<b>Ohio</b>	
Preble County 911 Center	937-456-6262
Preble County Sheriff Department	937-456-6262
New Paris Police Department	937-437-2121
Ohio State Police (Eaton)	937-456-5533

Table 6 – 24 Hour emergency contact information (continued).

Contact	Phone Numbers
<b>Fire Departments</b>	
Richmond Fire Department	911 or 765-983-7266
North Western Fire Department (New Paris, Ohio)	937-456-6262 or 937-437-8354
<b>Emergency Management</b>	
Wayne County EMA	765-973-9399
Preble County EMA	937-456-8121
<b>Hospitals</b>	
Reid Memorial Hospital	765-983-3000
Richmond State Hospital	765-966-0511
<b>Health Department</b>	
Wayne County Health Department	765-973-9245
Preble County Health Department	937-456-8187
<b>Local Emergency Planning Committees</b>	
Wayne County LEPC	765-973-9208
Preble County LEPC	937-456-8120

### Potential Alternative Sources of Water

This plan is meant to consider events that will require short-term and long-term response. Short-term response may involve temporary solutions such as trucking in water from another location or bottled water, etc. Long-term response requires permanent and long-term solutions (e.g., drilling a new well, building new permanent treatment facilities).

While much of the emergency response plan is designed to respond to emergency leaks and spills, it is possible that contamination could occur without any notice. The standard quarterly raw water quality sampling schedule for raw water would identify contamination at that temporal resolution. Indiana-American has a number of options for alternate sources of water depending on the circumstances. If contamination is identified in only one of the wells at either well field, the company can reconfigure pumping to eliminate usage of the contaminated well shifting demand to the other wells. The water company would attempt to treat the identified contamination to bring the well back into compliance.

In the event of contamination of the entire an well field or source area, the company can reconfigure pumping to eliminate usage of the contaminated well field shifting demand to the other groundwater production facilities at the Richmond operations. In the event of a large scale contamination affecting more than one groundwater production facility, corporate emergency treatment systems would be mobilized. Immediate assistance is available from IAWC Corporate Resources. Resources from the American Systems of Water Utilities also

could be accessed to establish another source of supply in a short period of time. Portable piping could be obtained from the Civil Defense, the State, or IAWC. Treatment would occur using a combination of existing facilities, temporary filters trucked to the site, or constructed filters erected as quickly as possible. Once the source and extent of the releases is established, a decision will be made about water supply replacement. IAWC will assess options for on-site treatment and implement if feasible.

### **Flooding**

Historically, the Richmond water treatment plants have continued to treat and deliver safe and adequate drinking water to its customer during flood events. If a treatment plant were to become flooded, the water company would discontinue pumping from that plant and shift demand to the other treatment plants in Richmond. If more than one treatment plant became flooded the water company would change the distribution system plumbing in order to pump from the surface water treatment plant until the flooded plants could be brought back on line.

### **Disruption of Electrical Power**

In the event of a loss of electrical power the Richmond treatment plants can satisfy the demand for electricity through the use of three diesel generators. The generators are designed to maintain water pressure throughout the distribution system.

### **Procedures to Notify Critical Water Users**

In the event of a water quality emergency the Indiana–American Richmond operations office will call the listed contact or a representative of each facility (Table 7). Wayne County EMA will assist with other public notification and information procedures, as indicated by the situation. This critical water user notification will occur as part of the standard process of public notice and emergency response.

### **Availability of Emergency Response Plans and Procedures**

Complete copies of the management plan, including the contingency plan, will be available at the Indiana–American Operations Office (1730 Sylvan Nook Drive).

Emergency procedures and contact numbers will be posted at the treatment plant with other similar emergency procedures.

Table 7 – Critical water user contact list and information.

Facility	Contact (if available)	Phone
<b>Hospitals and Nursing Homes</b>		
Reid Memorial Hospital	Barry MacDowell	765-983-3000
Richmond State Hospital	Jim McCormick	765-966-0511
Golden Rule Nursing Home		765-966-7681
Oak Ridge Nursing and Rehab	Jeff Jarecki	765-966-7788
Cherish Nursing Center	Ivan Doan	765-962-8175
Beverly Healthcare (Golden Rule)	Barry Hughes	765-966-7681
Heritage Regency	Brian Bailey	765-935-4440
Regency Manor	Sandy Smith	765-962-3543
Extendacare Richmond	Carol Rose	765-962-0043
Friends Fellowship Community	Jeff Baxter	765-962-6546
Renal Care Group		765-962-5611
Alterra Sterling House		765-939-3310
Wemle Children's Home		765-966-2506
Senior Day Care's & Housing		
Richmond Senior Center		765-983-7300
Adult Day Care of Richmond		765-966-0852
Interfaith Apartments		765-966-0064
<b>Schools</b>		
New Creations Boarding School		765-965-0099
Richmond Community School	Administration Office	765-973-3300
Indiana University East		765-973-8200
Ivy Tech State College		765-966-2656
Earlham College	Security	765-983-1400
Seton East	St. Mary's	765-962-5010
Seton West	Holy Family	765-962-4877
Community Christian School		765-935-3215
<b>Children Day Care Centers</b>		
Pauline Trueblood Nursery		765-983-1445
Kiddie College		765-966-4414
Ginger Bread House		765-966-6439
Head Start Program		765-966-5313
Richmond Day Nursery		765-966-1238
Townsend Day Care Center		765-965-5800
YMCA/Pre-school		765-962-7504
Lutheran Nursery School		765-962-5121
Noah's Ark		765-962-8869
Children's School		765-966-5767
7 <sup>th</sup> Day Adventist Pre-School		765-935-1033
Happy Heart Kiddie Campus		765-935-1769
Seton Catholic		765-962-3902

## **Chapter 9 – Education and Outreach Plan**

The Indiana wellhead protection rule requires "the establishment of a public outreach program to educate the public and owners or operators of identified potential sources of contamination about the consequences of groundwater contamination and the methods available for preventing groundwater contamination."

The LPT believes that an effective outreach effort is essential to protecting groundwater, an important community resource. The LPT recommends the following tools and activities.

### **Notification Letter to Property Owners and PCSs**

The wellhead protection rule requires Indiana–American Water Company, Inc. to notify property owners, mineral owners, and leaseholders that the property they own or lease falls within the boundaries of a wellhead protection area. In addition, owners of potential contaminant sources must be provided an opportunity to review the wellhead protection plan.

Indiana–American will contact a title company for preparation of a title search to identify property and mineral owners within the WHPA. Leaseholders will be identified using company service addresses; potential contaminant sources will be identified using the updated inventory.

The LPT identified notification as an opportunity to educate owners and potential contaminant sources. After identification, the LPT recommends that a notice that includes a map of the WHPA, the location of a review copy of the WHPP, a summary of the wellhead protection rule, and an educational brochure, be mailed to these interests every four years. The LPT specifically recommends that non–residential potential contaminant sources and owners be reminded about existing regulations and that homeowners and farmers be educated about safe chemical use, storage and disposal. The initial mailings also should include an invitation to a public presentation regarding the WHPP.

### **Review Copy of Wellhead Protection Plan**

The wellhead protection plan will be available at the Indiana–American Richmond Operations Office (1730 Sylvan Nook Drive) during regular business hours and at the Richmond Public Library during regular hours of operation.

### **News Releases**

The LPT will contact the local newspapers, radio station talk shows, and public access TV stations to provide information, issue press releases, and encourage ongoing coverage of the wellhead protection plan.

### **Public Presentations**

The LPT recommends holding an open house concurrent with the mailing of notification letters and that brief presentations be made to local elected officials and service

organizations. A series of presentations should occur periodically through local speakers bureaus.

### **Workshops**

The LPT recommends holding 3 community workshops immediately following the distribution of notification and posting of signs. These workshops will be targeted to the following groups:

- Owners and operators of non-residential potential contaminant sources
- City and county planning offices, and real estate and economic development professionals
- Residents, schools, and neighborhood groups

Each workshop will be announced via print advertisements and public service announcements by local media outlets.

### **General Educational Brochure**

The LPT recommends the utilization of educational materials produced by the Purdue University Cooperative Extension Service. The basic brochure should be included in notification letters to all property owners, mineral owners, leaseholders, and potential contaminant sources. It should also be sent periodically to Indiana-American customers as a bill stuffer. The LPT also may consider additional materials.

### **Web Site**

The LPT recommends that Indiana-American add a sub-page generally addressing wellhead protection and a section also specifically addressing activities in Richmond to its corporate web site. The web site is an appropriate vehicle for distribution of the plan and providing information about ongoing activities. The web site should include links to existing educational materials like those appearing on the Purdue University Extension Service wellhead protection web site. The site should also link to sites regarding best management practices for various land uses and activities.

### **School Curricula**

The LPT will develop educational modules about groundwater protection and make these available to local schools, especially through earth science and geology teachers.

### **Signage**

The LPT recommends that the signs have a small corporate logo and administrative phone number in one corner and utilize a phrase like "public drinking water protection area." The team also recommends adding an additional placard that identifies 911 as the appropriate contact for spill reporting. Indiana-American will contact the city of Richmond, Wayne County, and the Indiana Department of Transportation regarding the regulations appropriate to placement of the signs.

The LPT recommends the placement of general signage in the locations listed in Table 6 that mark entrances to the wellhead protection areas. Figure 4 shows the proposed wellhead protection management areas (shaded gray) with sign locations (numbered to correspond to Table 8).

*Table 8 – Wellhead protection area sign locations.*

	<b>Sign Location</b>
1	"G" Street Bridge
2	US Highway 40 at SW 2 <sup>nd</sup> Street
3	NW 2 <sup>nd</sup> and Richmond Ave
4	NW 1 <sup>st</sup> and Madden Court
5	NW "J" Street and Sheridan Street
6	US Highway 27 N. and N. "J" Street
7	N. 9 <sup>th</sup> and "D" Street
8	US Highway 40 at N. 4 <sup>th</sup> Street
9	Liberty Avenue
10	S. "L" Street and Garwood
11	US Highway 40 and Hayes Arboretum Road
12	US Highway 40 and Country Club Road
13	State Highway 121 and Country Club Road
14	State Highway 121 and US Highway 35
15	State Highway 121 and US Highway 35
16	State Highway 121 at the Ohio State line
17	I-70 and US Highway 40 interchange
18	I-70 and US Highway 40 inter
19	Hodgin Road at the Ohio State Line

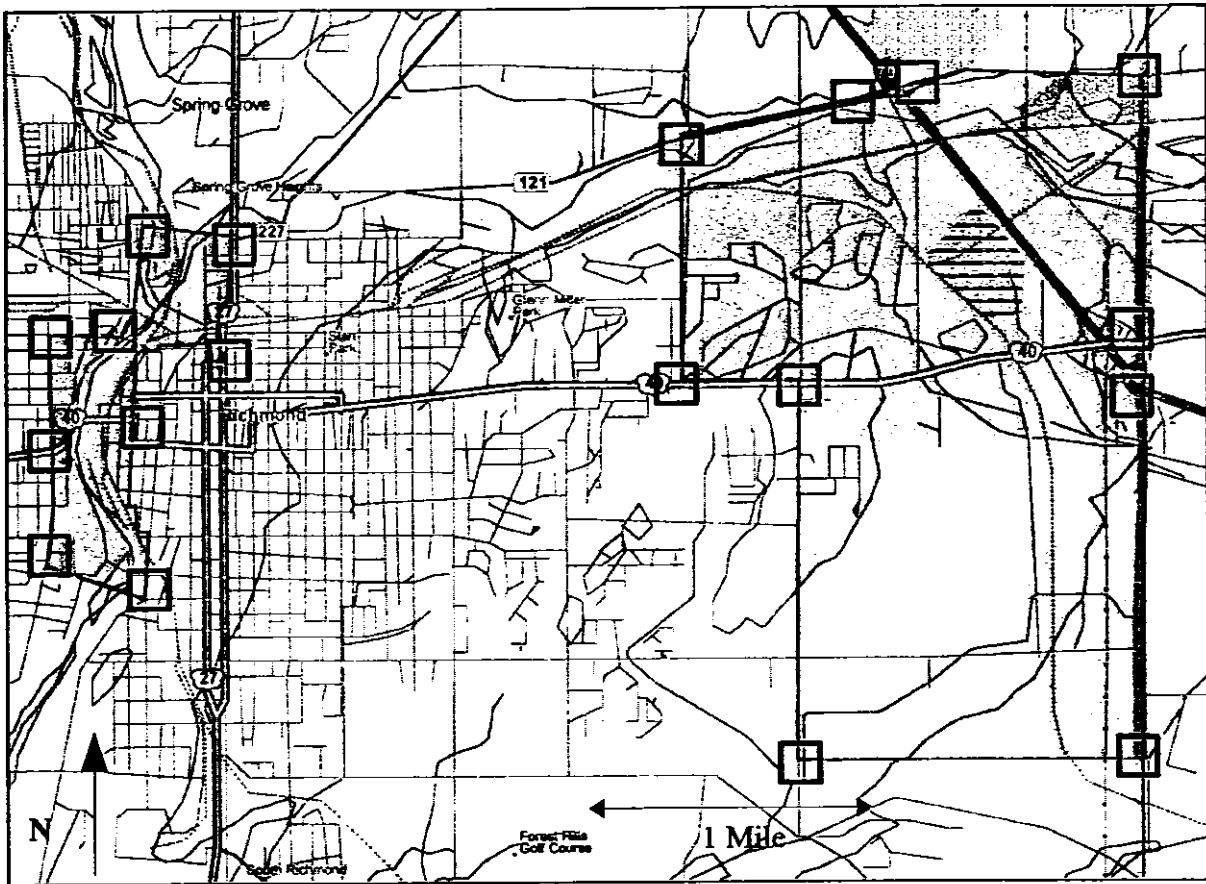


Figure 4 – Proposed wellhead protection management areas (shaded gray) and proposed wellhead protection area sign locations.

## Chapter 10 - Implementation

Chapters 6 through 9 contain a series of recommendations. Table 9 lists each of these recommendations and establishes responsibility and a timeline for each. Indiana-American and will continue their participation in this group and its efforts.

Table 9 - Planned activities and timelines for implementation.

Activity	Responsibility	Timeline for Completion
Management Plan (Chapter 6)		
Water quality monitoring	Indiana-American	Ongoing
LPT update materials	Indiana-American	Annually - Entire LPT(minimum)
Recommend revisions to Richmond WHPA map for the overlay zoning ordinance	LPT and Indiana-American	6 months after submittal
Develop and maintain potential contaminant source inventory database	Indiana-American	Develop within 12 months - ongoing maintenance
Identify abandoned wells	Indiana-American	18 months after submittal
Make formal request to the city to locate monitoring wells in both management areas	LPT with support from Indiana-American	Immediately after submittal
Make formal request to Wayne County Health Department Board for additional rules for septic inspection within the WHPA.	LPT with support of Indiana-American	3 months after submittal
Make a formal request to the WUR Board for the creation of a countywide household hazardous waste program	LPT with support of Indiana-American	3 months after submittal
Make a formal request to Wayne County Health Department Board, Wayne County Board of Commissioners, and the Richmond mayor to encourage better enforcements of dumping restrictions within the WHPA	LPT with support from Indiana-American	6 months after submittal
Sanitary Setback Management Plan (Chapter 7)		
Contact property owners of sources of groundwater supplies and request formal protection agreements (e.g., conservation easements) to increase security of the water supply. Explore land purchase where other tools cannot be implemented	Indiana-American	12 months after submittal
Maintain current monitoring schedule and annually report to LPT	Indiana-American	Ongoing

Wayne County & Hamilton  
 What about regulated UST's? and household UST's?  
 application

Table 9– Planned activities and timelines for implementation (continued).

Activity	Responsibility	Timeline for Completion
<b>Contingency Plan (Chapter 8)</b>		
Provide training for local responders and dispatchers	LEPC and Local Fire Departments	Annually
Distribute copies of the contingency plan	Indiana–American	Upon submittal
Make a formal request to the Local Emergency Planning Committee, the local dispatch, the Richmond Fire Departments that the wellhead protection map and contacts be integrated into the local emergency management plan and department SOPs, respectively.	Indiana–American & LPT	Upon submittal
<b>Education and Outreach Plan (Chapter 9)</b>		
Initial Rollout	Indiana–American & LPT	12 months after submittal
Notification of owners, PCS operators, leaseholders	Indiana–American	12 months after submittal
Public Presentations	Indiana–American & LPT	12 months after submittal
WHP Open House	LPT & Indiana–American	6 months after submittal
Develop general educational brochure	Indiana–American	Completed
Develop and distribute materials to media	Indiana–American	Concurrent with notification and annually thereafter
Develop workshops to educate owners and potential contaminant sources	Indiana–American	12 months after submittal
Augment current web sites	Indiana–American	12 months after submittal
Develop school materials	LPT	24 months after submittal
Post signage	Indiana–American	6 months after submittal

## Glossary/Abbreviations

- Aquifer** – An underground geological formation capable of receiving, storing, and providing water for domestic and/or industrial use.
- Community Public Water Supply System (CPWSS)** – A public water supply system that serves at least fifteen (15) service connections used by year-round residents or regularly serves at least twenty-five (25) year-round residents.
- Contingency Plan (or Emergency Action Plan)** – A course of action taken to provide safe drinking water in emergency conditions.
- Delineation** – A study done to define the boundaries of wellhead protection areas.
- Indiana–American Water Company (IAWC)** – Investor–owned water utility that serves directly the city of Richmond and adjacent areas
- Indiana Department of Environmental Management (IDEM)** – State regulatory agency responsible for administration of the wellhead protection rule.
- Inorganic Compounds (IOCs)** – Chemical substances of mineral origin lacking the element of carbon. Examples are sulfur, boric acid, and arsenic.
- Local Emergency Planning Committee (LEPC)** – A local committee mandated by Emergency Planning and Right to Know Act (EPCRA) and appointed formally by the Indiana Emergency Response Commission (IERC) that is responsible for developing an emergency plan to prepare for and respond to chemical emergencies.
- Local Planning Team (LPT)** – A group of people from local government, the private sector, residents and the general public that actively participates in the development and implementation of the wellhead protection plan (WHPP).
- Potential Contaminant Source (PCS)** – A facility, site, practice, or activity that possesses the ability to contaminate groundwater.
- Potential Contaminant Source Inventory (PCSI)** – A list of potential sources of contamination within a wellhead protection area.
- Safe Drinking Water Act (SDWA)** – Legislation passed in 1974 that gave the federal government authority to regulate the provision and protection of drinking water.
- Sanitary Setback** – An area established around a public water supply well to protect groundwater from direct contamination.
- Synthetic Organic Compounds (SOCs)** – Synthesized (man–made) compounds containing carbon. Some SOC's are volatile; others tend to stay dissolved in water instead of evaporating.
- Time of Travel (TOT)** – The calculated length of time it takes a drop of water to reach a public water supply well from a certain point.
- Total Organic Carbon (TOC)** – Total organic carbon is the volume concentration of organic carbon relative to the total volume. Dissolved carbon is found in both an inorganic form dissolved from the carbonate minerals and an organic form leached into the aquifer from the organic matter at the surface (decaying leaves, algae, etc). Total

Organic Carbon (TOC) is found by subtracting total inorganic carbon in a sample from the total carbon.

**Total Trihalomethanes (TTHM)** – Refers to the combined concentration of trihalomethanes. Chloroform, bromodichloromethane, dibromochloromethane and bromoform are collectively known as trihalomethanes.

**United States Environmental Protection Agency (USEPA)** – Federal regulatory agency responsible for protecting drinking water resources.

**Volatile Organic Carbons (VOCs)** – Compounds composed of hydrogen and carbon (hydrocarbons) that tend to volatilize or evaporate. Includes methane and non-methane hydrocarbons and derivatives such as benzene and formaldehyde.

**Wellhead** – The point at which a well penetrates the ground surface.

**Wellhead Protection Area (WHPA)** – The delineated surface and subsurface area which contributes water to a CPWSS production well or well field and through which contaminants are likely to move within a specified period.

**Wellhead Protection Plan (WHPP)** – Proactive program mandated by the 1986 amendments to the federal Safe Drinking Water Act and developed by the LPT and the community public water supply system (CPWSS) to sustain drinking water quality in groundwater that supply public wells.

**Wellhead Protection Rule** – Regulation adopted by the Indiana Water Pollution Control Board in 1996 in response to requirements set forth in the 1986 Safe Drinking Water Act. The rule is administered by the Indiana Department of Environmental Management. Effective March 28, 1997, the Public Water Supply System must submit a WHPP by March 28, 2000, 2001, or 2002 depending on number of customers served.