Elks Run Study Committee

Final Report

September 2012

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INTRODUCTION

In the fall of 2006 when the *Source Water Assessment and Protection Plan for Harpers Ferry Water Works, Jefferson County* was presented to the Town of Harpers Ferry, very few customers of the Harpers Ferry Water Works knew where their drinking water came from and very few people in Jefferson County were familiar with the environmental significance of watersheds. The work of the Elks Run Study Committee helped to change all that. Today, even though environmental science is not mandated in the curriculum, several schools have built the study of watersheds and water quality monitoring into their classroom lessons. Concerned citizens in the county are actively forming watershed associations, and governing bodies at the local and county level are strengthening ordinances to ensure that some level of best management practices are required to minimize pollutants from water run-off when land is disturbed for development purposes.

The former mayor of Harpers Ferry, James Addy, and Mayor Bob Hardy of Bolivar were instrumental in forming the Elks Run Study Committee and appointing its members. Current Mayor Joe Anderson of Harpers Ferry continued his support of the committee as it carried out its obligations. Thanks to them for their interest and support.

The Elks Run Study Committee would also like to thank the Jefferson County Commission for listening to the Committee's concerns and allowing the County Planning staff to provide us with data as needed. The County Commission took action at the Committee's urging that ultimately saved the taxpayers millions of dollars.

Many others played key roles in advancing the Elks Run Study Committee's agenda. A list of those individuals can be found in Appendix B of this report. They can never be thanked enough.

For further information about the Elks Run watershed, visit the website at http://www.elksrunwatershed.org.

Barbara Humes
Chairperson
Elks Run Watershed

Elks Run Study Committee

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Background

The Elks Run Study Committee (ERSC) was appointed by the councils of Harpers Ferry and Bolivar in the fall of 2006 as a result of the release of the *West Virginia Source Water Assessment and Protection Plan* (SWAP) for the Harpers Ferry Water Works. SWAP was prepared by the West Virginia Rural Water Association to assess drinking water sources serving public water systems for the susceptibility to pollution. The ERSC was authorized to study the needs of the water supply of the Harpers Ferry Water Works and make recommendations to the mayors and councils of both towns on protecting the quality and quantity of the Elks Run water supply; and to implement recommendations outlined in the SWAP.

The Elks Run (and its tributary the Elk Branch) totals 7.9 miles in length and is the only surface water stream in Jefferson County that serves a municipality. Additionally, our municipality was historically the first in the State to utilize a surface stream to provide its citizens with drinking water. The Harpers Ferry Water Works currently serves a population of approximately 1800 with 709 residential service connections and 113 commercial connections. The service area includes the populations of Harpers Ferry, Bolivar, Cavalier Heights, the KOA Campground, the National Park Service, local hotels and commercial businesses, and tourists.

The stream has its genesis on the Frank Buckles farm. The water travels over the surface and across farm fields, forest land, suburban lawns, and city streets and in some places it seeps into the soil and travels as groundwater on its way to the Potomac River. The geographical area that supports the stream is called the Elks Run watershed. It drains approximately 18.1 square miles, which is a little over 9 percent of the total area in Jefferson County. The principal use of the Elks Run watershed remains farming. There are 1,859 acres of cropland and 2,309 acres of pastureland in the entire watershed. Houses, towns and roads make up 1,726 acres in the entire watershed. Several new housing developments are slated to be built within its boundaries (Daniels Forest and Stonecrest).

Scope of Activities

The ERSC conducted its activities on three fronts: educational outreach; data gathering and monitoring; and security of the water supply.

<u>Educational Outreach</u>

Educational outreach proved to be the most challenging because it was just as important to reach the people who lived throughout the watershed as it was to reach the customers of the Harpers Ferry Water Works. Also the housing boom was in full swing during the first three years that the ERSC operated and the Jefferson County Planning Commission and the Jefferson County Planning and Zoning Department were struggling to revise their

ordinances to ensure responsible and sound growth. We needed to take a comprehensive and regional view of the issue of the water supply. The ERSC knew it had to help shape local policies that would, in the long run, affect the condition of the Elks Run and the Elk Branch. The only way to do that was to become armed with data. Thus, the second front was to conduct data gathering and monitoring to determine the health of the stream and to ensure that it did not further degrade as the result of ill-conceived development and other problematic land use practices.

Data Gathering

Fortunately, at this time, the health of the Chesapeake Bay was becoming a national concern. A protracted federal effort ensured that resources were available for state and local entities to take stock of the sources of pollution. We were able to tap into these resources to gather existing research on the Elks Run from biological experts such as the Jefferson County Watershed Coalition and the Interstate Commission on the Potomac River Basin and to generate new data about stream impairments by working with the WV Department of Agriculture and the Eastern Panhandle Conservation District. The ERSC was able to weigh in at a critical moment with the West Virginia Department of Environmental Protection's data gathering on Total Maximum Daily Load (TMDL) for various impaired streams in the Potomac Direct Drains watershed. (A TMDL establishes the maximum allowable pollutant loading for a waterbody to comply with water quality standards, distributes the load among pollutant sources, and provides a basis for actions needed to restore water quality.) An educational component was introduced to involve students at Harpers Ferry Middle School and Wildwood Middle School to regularly test the Elks Run water and analyze their findings throughout the school year.

Security of the Water Supply

The third front involved security of the water supply. Stormwater runoff, the potential risk from non-point sources of pollution such as agricultural practices, and malfunctioning septic systems posed a danger to the Harpers Ferry water supply. The threat of hazardous material spills, industrial park contaminants, and inadequate emergency preparedness throughout the 18 square miles of watershed needed to be addressed. An unexpected threat to the Elks Run watershed came when a local water provider proposed to transport millions of gallons per year from the Elks Run watershed across the Shenandoah River via an underground pipeline to the Blue Ridge mountain community. The ERSC, along with other interested parties in the county, provided due diligence to the Jefferson County Public Service District to disclose the inadequate grounds upon which such a proposal was based. We also wanted to strengthen the county's emergency management system to respond to water emergencies. This is especially important since the CSX railroad, which is a major carrier of freight and hazardous material, snakes along the Elk Branch and makes our drinking water particularly vulnerable to contamination. And finally, with the Water Works under new management in 2011, we were able to ensure that the physical property was secure with the proper signage and that security systems and emergency response procedures were in place.

ERSC Achievements

The ERSC worked with various partners to prepare a watershed-based management plan and to secure funding from multiple sources to carry out projects relating to educational outreach, data gathering and monitoring, and security of the water supply.

Strengthened County Ordinances:

The ERSC met numerous times with County planning officials and elected County Commissioners throughout 2007, 2008 and 2009, a period when the county ordinances were being revised and new zoning was proposed. Our goal was to ensure that stringent safeguards were written into law to protect the Elks Run since it was the primary source of drinking water for our communities. Activities included:

- Provided handouts of the ERSC's goals and objectives.
- Discussed our priorities and expressed interest in the development of the proposed County zoning ordinance.
- Worked with the County Planner and mapper to find a way to automate the generation of names of property owners in the watershed and in the watershed's zone of concern, as defined in the SWAP.

- Worked cooperatively with the Jefferson County Tax Office. Acquired county tax maps and outlined the watershed area from which we prepared handouts for public meetings, county officials and municipal officials.
- Spoke at public hearings on the proposed County Zoning Ordinance, specifically on Article 4 pertaining to Environmental Protection to ensure strong protections for streams that provide drinking water.

The result of our effort was that a zone of critical concern along the Elks Run and the Elk Branch were given special protection should there be development or other land disturbance within the watershed.

Networked with Local, State and Federal Agencies

Sent letters of appreciation to the Jefferson County Planning Office for their staff support in helping us gather outreach information from county maps. Maintaining outreach to County planners was crucial for effectively carrying out our priorities.

Because the Harpers Ferry National Park Service is a water customer, we kept the NPS apprised of our efforts via correspondence with Bill Hebb, Natural Resource Specialist at the NPS.

Attended a Region 9 meeting with the Mayor of Harpers Ferry to meet and discuss issues with Alana Hartman of the West Virginia Department of Environmental Protection and to explore funding sources.

Held regular meetings, open to the public, that featured invited guest speakers:

- Dick Lattimer – Jefferson County Watershed Coalition
- Jim Cummins - Interstate Commission on the Potomac River Basin
- John Paul Heafer – Chief Plant Superintendent of Harpers Ferry Water Works

- Herb Peddicord - Chesapeake Bay Forester with the WV Division of Forestry
- Jim Mickey – Jefferson County Supervisor Eastern Panhandle Conservation District
- Alana Hartman – WV Department of Environmental Protection
- Sara Wurtenberg – Education Outreach Specialist Eastern Panhandle Conservation District
- Michael Schwartz – Senior Environmental Associate Freshwater Institute
- Candi Cane – Shepherd University Environmental Organization representative

Became a member of several listservs relating to streams and watershed issues

- West Virginia Conservation Agency/Watershed Network
- Potomac Drinking Source Water Protection Partnership
- Jefferson County Alerts

Met with environmental and water quality experts and scientists to gather information on geologic issues, water quality and stream monitoring.

- Joe Hankins, Freshwater Institute,
- Peter Vila, Professor of Environmental Science, Shepherd University

Met with Peter Appignani, President of the Gap View Homeowners Association (HOA), to evaluate stormwater drainage and runoff. Elks Run meanders through the Gap View property. Provided a presentation at an HOA meeting to encourage homeowner participation in the Elks Run Water Quality program.

Appeared before the Bolivar Town Council and Harpers Ferry Town Council to seek support and to report each month on Committee activities as a regular item on their Council agendas.

Kept community members aware of the Committee's activities by publishing descriptive updates of Elks Run watershed protection efforts in the town newsletters.

Contributed to the Potomac River Drainage Report: Participated in the preparation of the Total Daily Maximum Load (TDML) report of the Potomac River Drainage by attending a stakeholders meeting in Martinsburg and providing comments on the draft document prepared by the WV DEP. Reviewed the final response of the TDML of the Potomac Direct Drains Watershed, and drafted comments that were sent in August 2007 to the US EPA.

Reviewed and provided input into other reports including:

- West Virginia Potomac Tributary Strategy report
- USGS proposal for Development of a Water Resources Monitoring Network in Jefferson County.

Conducted Field Trips:

- August 3, 2007 - led by John Mayhew, local landowner, to locate the site of the original Elk Run spring on the Mayhew property and to understand the role of property easements for Elks Run where it flows into the municipal Water Works.
- December 3, 2007 – led by Dan Riss, to track and photograph the course of the Elks Run stream across Jefferson County to its purported source as noted on county maps.
- Fall 2009 – Led by Herb Peddicord to tour a riparian buffer project on the farm of Frank Buckles. Mr. Buckles daughter gave a talk on the family history and shared remembrances of the Elks Run when it was full of water. She took the group to the spot on the Buckles property where the Elks Run stream has its genesis. The ERSC had long been hoping to find the spring source. We confirmed this finding by comparisons with earlier maps and current aerial views.

Elks Run Watershed Stream Walk - Nov. 9, 2008 Over 30 people of all ages participated. The event started with a general orientation. Eco-friendly, cloth grab bags were distributed, filled with a map of the watershed and educational materials including how to protect water sources and how to construct a rain garden. The West Virginia Department of Environmental Protection supplied trash bags, gloves and vests so that participants could remove any litter discovered along the way. Participants traveled to four Elks Run stream sites. At each of the sites, a speaker presented an informative topic of interest. Paul Burke, President of the Stewards of the Potomac Highlands, spoke about sediment pollution from construction sites and raw sewage from leaking sewer pipes and provided participants with information about how to report problems to the proper authorities. Dan Riss spoke on non-point source pollution. Jim Cummins, a member of the Interstate Commission on the Potomac River Basin, talked about the biological health of Elks Run and described the value of and the vulnerabilities of the Karst landscape. Local science teacher Jim Jenkins conducted a macro-invertebrate study of water quality. Jim provided water nets, hip length water wading boots, microscopes, and tweezers for catching and viewing bugs to all willing participants – truly a hands-on adventure! The trip concluded with a tour of the water treatment plant conducted by John Paul Heafer, Chief Plant Superintendent. About 12 bags of trash were collected. Newspaper reports and photographs covering the Stream Walk appeared in the Martinsburg Journal, the Hagerstown Herald Mail, and the Harpers Ferry Community Newsletter thus bringing further awareness of the Elks Run to the public.

Stream Monitoring: In January 2008, the Office of Environmental Programs of the West Virginia Department of Agriculture in partnership with the ERSC began monitoring water conditions at two sites along the Elks Run and two sites along the Elk Branch. Samples of water are taken monthly and tested for fecal coliform, turbidity, aluminum, nitrate, phosphorus, suspended solids, and other indictors of water quality. The Elks Run Study Committee used the monthly data to look for trends in the quality of the water as it travels toward the Harpers Ferry Water Works for treatment and to report these observations to the Harpers Ferry Water Works and to the water customers. Brock Markwell, Environmental Technician II, Chuck Fisher, Environmental Tech I, and Matt Monroe, Environmental Programs Supervisor, conducted the monitoring as part of the state's Water Quality Monitoring Program.

Attended Workshops

Members of the ERSC kept abreast of watershed issues by attending conferences and workshops.

- Stream Monitoring Workshop: June 12, 2008: Attended the Stream Monitoring Workshop provided by the WV Save Our Streams that was held in at the FLOC Outdoor Learning Center in Jefferson County that deepened our understanding of monitoring skills.
- Karst Workshop at the National Conservation Training Center in Shepherdstown: 2009 and 2010: Provided scientific information on the soil, topography, and groundwater behavior in Jefferson County.
- Watershed Celebration Conference: (2008-2011): Held annually at various locations within the State to discuss issues of concern to all watershed organizations and to engage in hands-on learning activities.
- Jefferson County Outdoor Education: 2009: To assist teachers in improving environmental classroom instruction.

Initiated a Stream Bank Erosion Project: Met regularly with Alana Hartman, Potomac River Basin Coordinator and Michael Schwartz, Freshwater Institute, to launch and collect data on the stream bank erosion project. Longitudinal data was collected in the field over a 3-year period from three sites along the Elks Run. Data from the project was used to determine the degradation of the Elks Run stream banks over time.

Raised Awareness at the Jefferson County Water Summit: ERSC member Dan Riss who was a representative on the Jefferson County Water Advisory Committee, assisted in the planning and production of the first annual Jefferson County Water Summit held on April 20, 2008 in Charles Town. ERSC Chairperson Barbara Humes presented a PowerPoint discussion on the importance of the Elks Run and the problems it faces due to watershed pollutants and development. Other presenters included representatives from the Interstate Commission on the Potomac River Basin, the WVDEP, the US Geological Survey, WV Department of Environmental Protection, Shepherd University, GeoConcepts Engineering, and the Freshwater Institute. Over 50 experts in water quality, state officials, county commissioners, and other water quality stakeholders attended. We also provided a letter of support for the WAC's first grant application.

Installed Roadside Signage: In partnership with the WV Division of Highways, we erected roadside signs in three places where the Elks Run crosses a county roadway. The signs are located on Route 230 near the Gap View Estate housing development, Job Corps Road near the entrance to the Breckenridge North housing development, and Flowing Springs Road just north of Job Corps Road. Hundreds of people drive these roads every day as they commute to and from their homes and are now aware of the where the Elks Run is located. This project was completed in the fall of 2008.

Successfully Applied for Grants

- Eastern West Virginia Community Foundation Two Rivers Grant: ($2,400) November 2008: To use various modes of communication to provide education

and outreach to the general public and particularly those who are stakeholders in the health of the Elks Run.

- Stream Partners Grant: ($1316) June 2009 - From the WV DEP for education and outreach efforts. This small grant helped us communicate with property owners in the watershed's zone of concern on ways to help keep the Elks Run stream clean. We researched names and addresses of affected landowners in the watershed and sent them a letter and an informative poster detailing best management practices.
- Elks Run Watershed Water Quality Improvement Project: ($250,000) In July 2009, major funding became available to the Eastern Panhandle Conservation District for a water quality improvement project. The Jefferson County Commission, under recommendation by the Jefferson County Water Advisory Commission, suggested that the ERSC be consulted for advice on an appropriate project for the Elks Run watershed. In August 2009, the ERSC developed a proposal for consideration by the Eastern Panhandle Conservation District to initiate a project that would correct these two major situations (malfunctioning septic systems and agricultural run-off) contributing to poor water quality within the watershed and to take action to do so with the cooperation of property owners. The proposal, entitled "Elks Run Watershed Water Quality Improvement Project", successfully underwent an approval process involving local and state agencies. Upon approval of the proposal, a partnership was formed in May 2010 to carry out the project. The partnership includes the Jefferson County Water Advisory Commission, the WV Department of Agriculture, the Jefferson County Board of Health, the WV Department of Environmental Protection, the Jefferson County Commission, the Natural Resources Conservation Service, and Shepherd University. The ERSC used direct mailings, newspaper advertisements, and public announcements, to encourage landowners within the watershed to apply for a local grant from the Eastern Panhandle Conservation District. To date, approximately 60 landowners have participated in septic pumping and 2 farmers have installed stream fencing, stream crossing, or riparian tree planting. These improvements will keep groundwater and streams clean for municipal drinking water and recreation, provide a healthy habitat for aquatic life, reduce erosion, and increase grazing efficiency.

Webpage: Launched a webpage as a result of the grant from the Eastern West Virginia Community Foundation-Two Rivers Giving Circle. The website is located at http://www.elksrunwatershed.org

Table Top Display: Developed a tabletop display of photos and maps of the Elks Run along with handouts describing the ERSC's goals and purpose, and "fun facts" about the Elks Run for use at the WAC Water Summit and for other public purposes. This was an Eastern West Virginia Community Foundation grant project.

Brochure: 2008-2009: Designed and developed a brochure that explained why the Elks Run watershed and its streams are important. It is a tri-fold brochure with 5 panels of information on one side and a color map of the watershed on the other side. This

brochure was possible because of a grant from the Eastern West Virginia Community Foundation. 1000 copies were printed and mailed to all the customers of the Harpers Ferry Water Works. Extra copies were used as handouts at the Town Hall and other places. A follow-up survey was conducted to determine the impact of the information.

Poster: 2009: Designed and developed a 11" X 17" full color poster, "Pollution Solution", describing best management practices that residents, business owners, and farmers can do to help keep the Elks Run clean and free of pollutants. Posters were mailed to 250 landowners in the watershed along with a cover letter. Funding was made possible through the Stream Partners grant.

Demonstration Rain Garden – Strategically located a demonstration rain garden at the Sam Michaels Park Recreation Center in a publicly accessible and highly visible location to raise public awareness about stormwater run off. It is located in a swale below the parking lot in front of the main recreational building and will be viewed by multitudes of people throughout the year. The rain garden was designed by the Harpers Ferry Master Gardeners and members of the Harpers Ferry Woman's Club assisted in the planting. Funding was received through the Stream partners grant.

Middle School Water Monitoring Project – Students at Harpers Ferry and Wildwood Middle Schools participated in a water monitoring educational program during the past three school years. Twice a month students left their classroom to collect water samples in the watershed stream. The program teaches students the importance of clean water. Students graphed stream sampling data, analyzed the information, and participated in a web-based video conferencing event to compare findings. Funding was received through the Eastern Panhandle Conservation District (EPCD).

Advocacy: (2008 – 2012) The ERSC represented the position of the towns of Bolivar and Harpers Ferry in public remarks and letters to the Jefferson County Public Service District (JC PSD) on our concerns that the proposed public/private partnership of the JC PSD with Jefferson Utilities Inc. (JUI) would have a negative impact on the Elks Run watershed water quality and quantity. The partnership proposed to pipe water from the watershed, across the Shenandoah River to service current and future residents living on the Blue Ridge mountain. The proposed pipe would have drained a seriously large amount of water from the watershed. In 2011 an alternative source of water was found through drilling a well. The pipeline project was halted. In 2012 ERSC was lauded as helping to save the county $18 million dollars from going forward with an unneeded project.

Rain Barrel Workshop – Thirty-six Harpers Ferry and Bolivar homeowners learned water conservation tips at a rain barrel workshop on March 12, 2011, at the Bolivar Community Center. The workshop, sponsored by the West Virginia Conservation Agency, the Eastern Panhandle Conservation District, and the Elks Run Study Committee, taught workshop participants about rain barrels, rain gardens and the impact storm water runoff has upon the Chesapeake Bay. Participants received a free rain barrel and a packet of educational

information on maintaining rain barrels, installing a rain garden and alternative lawn care procedures. Funding was received through the Chesapeake Bay Program.

CD-ROM Archive: Amassed a wealth of watershed information including generic information about watershed issues and specific information such as reports, studies, and data pertaining to our local watershed issues. Installed this information on a CD for reference purposes.

Improved Emergency Management – Emergency preparedness was dealt with on two levels. The first was at the county level. Jefferson County has an Emergency Operations Plan, as adopted by the Jefferson County Commission. The County has state and federally mandated resources and agencies that cooperate in the areas of planning, preparedness, hazard mitigation, training, and emergency response. ERSC member Dan Riss participated in a simulation exercise in 2010 sponsored by the County that, among other things, modeled a hazardous material spill in the Elks Run watershed area (along the railroad track). As a result, the County became aware of a vulnerability in identifying and locating a mishap in an area of generalized specificity.
Members of the ERSC met with the County Commissioners to discuss issues pertaining to water quality.

The second is at the plant level. In early 2011, ERSC met with the Harpers Ferry Water Works plant manger to discuss elements of SWAP that relate to the water works and provided a copy with the relevant sections highlighted. We addressed water plant safety and security issues. The water plant manger reviewed the up-to-date training that plant employees are required to undergo. The importance of 24-hour plant surveillance was pointed out and through our work with the Water Commission this safety feature has been added. Also, a robo-call system has been installed at the Water Department to notify customers and businesses within Harpers Ferry, Bolivar, and all other service areas if there is a water shut-off situation. Appropriate warning signage inside and on the grounds of the water plant is in place as required by law. The Water Plant has appropriate emergency plans on file.

Findings

As noted above, educational outreach was most challenging. Public awareness is essential in order to build support for protecting the quality and quantity of our water supply. Outreach has to occur on multiple levels.

Most of our residential water customers are now familiar with the watershed and many are willing to try best management practices such as rain barrels and native plants.

Engaging middle-school students had a greater impact than initially imagined. Not only did students become excited and engaged in water testing and data analysis but several expressed interest in pursuing career in outdoor science. Parents became involved. Principals and teachers welcomed the resources that were provided to support an environmental curriculum. Teachers were more willing to extend their skills and

knowledge by seeking additional professional development opportunities in teaching environmental science.

The Elks Run does not have severe problems of erosion. Small pockets exist but can be remedied with riparian buffers, fencing, and allowing natural vegetation to take over within the zone of critical concern.

Based on field trip observations and public input, there are several places along the course of the Elks Run and the Elk Branch that have experienced a diminishment of water flow over time. Some observers have correlated this to the development of land within the watershed and lowering of the water table.

Litter and non-point pollution continue to present a problem. The most significant cause of biological impairment in Elks Run and Elk Branch were determined to be sedimentation and organic enrichment. Organic enrichment was linked to too much fecal coliform bacteria (such as untreated sewage and animal waste).

The monthly data samples taken by the West Virginia Department of Agriculture's Water Quality Monitoring Program shows that the Elks Run fecal coliform levels are on the higher side with 26% of samples above the established threshold and out of compliance with the WV Department of Environmental Protection standards.

Better stormwater management within housing developments and densely populated communities makes a positive difference. For example, Gap View modified its grass mowing techniques and has allowed a natural rain garden to flourish around its storm water ponds and swales in the public areas of the development thus helping to filter out pollutants from the stormwater runoff.

Our watershed consists of mostly Karst topography, which makes it difficult to detect breaks in sewer pipes. Karst topography is limestone formations that act as a sponge and the effluvia from broken sewer pipes tends to go down into the ground water without being immediately noticeable above ground. Broken sewer pipes in densely populated areas are of concern to maintaining water quality downstream.

Emergency management at the Water Works plant has been strengthened.

Next Steps

The ERSC recommends encouraging the formation of an independent watershed group to continue monitoring and advocating for maintaining and improving the quality and quantity of the Elks Run and the Elk Branch.

Some activities, such as emergency management and stormwater management, will probably be adopted by the Harpers Ferry Water Commission.

Continue the monitoring of the Elks Run in some fashion including involvement with any new watershed association.

Appendix A

Outline of SWAP Recommendations

The 1986 amendments to the federal Safe Drinking Water Act (SDWA) required States to develop Wellhead Protection (WHP) Programs to protect ground-water sources used by public water systems from contamination. To expand the benefits realized from WHP efforts, the 1996 Safe Drinking Water Act reauthorization (Section 1453) requires States to develop a Source Water Assessment and Protection (SWAP) Program. The purpose of the SWAP, prepared by the West Virginia Rural Water Association in September 2006, was to delineate and identify potential contaminants and threats to drinking water sources within the Elks Run watershed source water protection zone, and identify avenues for planning and management of those threats at the local level.

The Elks Run Study Committee (ERSC) was tasked with the responsibility of implementing certain measures recommended by SWAP to reduce those threats. Below is an outline of those recommendations (see pp. 36-43 in SWAP):

A. Conduct an Education and Outreach Campaign

1. Placement of signs on thoroughfares near the SWAP areas
2. Placement of Federal Offense Warning Signs at treatment plant storage tanks and pump stations
3. Training of emergency responders
4. Newspaper articles in the local newspaper
5. Educational mailing to the water users and identified potential source owners
6. Educating the general public

B. **Handling Hazardous Materials**

1. Provide information on proper chemical storage or mixing to appropriate nearby facilities
2. Provide information to farmers on best management practices using pesticides and herbicides

C. Monitor Regulatory Control of Non-Point Source Pollution

1. Draw from local expertise
2. Engage county and state officials
3. Engage federal agencies

D. Safety and Security Issues

1. Develop Water Works treatment plant strategies (training, safety checklist, warning signage for unauthorized access, security inspections)

E. Creation of an Aquifer Protection Zone

1. Jefferson County Commission develops prescriptive land use development ordinance

F. Water Works Monitoring

1. Utilize Standardized Monitoring Framework

G. Groundwater Protection

1. Sinkhole management at county level including buffers, containment for oil storage
2. Emergency response to spills and leaks

H. Sanitary Setback Management Plans

1. Ensure that appropriate Jefferson County agencies are compliant

I. Future infrastructure improvements

1. Jefferson County Commission should reduce the number of on-site waste disposal systems.
2. Implement program to counter failing septic systems throughout watershed
3. Strengthen sewer ordinances throughout watershed

Appendix B

Elks Run Study Committee Partners and Resource Specialists

Alana Hartman
Potomac Basin Coordinator
West Virginia Department of Environmental Protection

Michael Schwartz
Senior Environmental Associate
The Conservation Fund Freshwater Institute

Tony Redman
(Former) Director of Planning
Jefferson County Department of Planning and Zoning

Jennifer Brockman
(Current) Director of Planning
Jefferson County Department of Planning and Zoning

Todd Fagin
GIS Specialist
Jefferson County Department of Planning and Zoning

Roger Ethier
President
Jefferson County Water Advisory Commission

Bill Zaleski
Sanitarian Supervisor
Environmental Section
Jefferson County Board of Health

Amanda Sullivan
Environmental Specialist
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West Virginia Department of Agriculture

Matthew Monroe
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Regulatory and Environmental Affairs Division
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Robert Schnably
District Conservationist
Natural Resources Conservation Service
US Department of Agriculture

Herb Peddicord
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Paul Burke
President
Stewards of the Potomac Highlands

Jim Cummins
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Dick Latterell
President
Jefferson County Watersheds Coalition

John Maxey
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Data Direct, Inc.

Paul Marshall
Board President
Jefferson County Parks and Recreation

Kristen Trevey
Intern
Shepherd University

Norleen Hoadley
Environmental Club Sponsor
Wildwood Middle School

Charity Marsteller
Science Teacher
Wildwood Middle School

Carolyn Thomas
Science Teacher
Wildwood Middle School

Robin Good
Science Teacher
Harpers Ferry Middle School

Peter Appignani
President
Eastern Panhandle Organization of Homeowners Association

Jami Thompson
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Warren Mickey
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Graphic Design

Appendix C

Elks Run Study Committee Appointees

Appointee	**Municipality**	**Term of Service**
Ron Moltier	Bolivar	2006
John Kusner	Bolivar	2006-2007
Jim Jenkins	Bolivar	2006-2007
Lin Hale	Harpers Ferry	2006-2010
Mary Rutherford	Bolivar	2006-2010
Elizabeth Budge Blake	Bolivar	2006-2012
Dan Riss	Harpers Ferry	2006-2012
Barbara Humes	Harpers Ferry	2006-2012
Cathy Burcham	Bolivar	2007-2012
Vicki Eckert	Bolivar	2008-2012