
ISSUES AND MANAGEMENT RECOMMENDATIONS

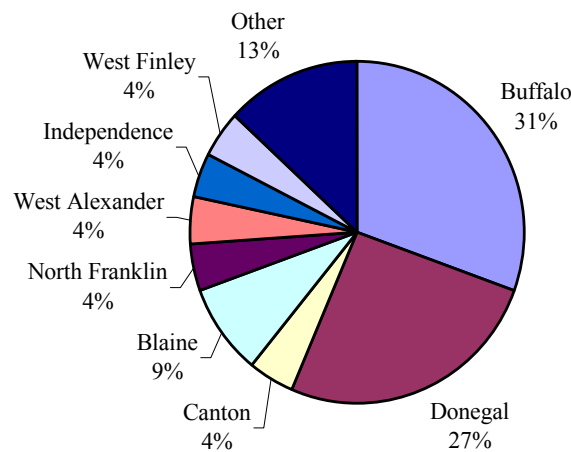
Public comments made during public meetings, in resident surveys, and through person-to-person contact were used along with scientific data to develop top issues and concerns related to watershed protection and overall health. The following section describes the results of surveys, provides a list of issues, and highlights management recommendations for future improvements in the watershed.

Public Surveys

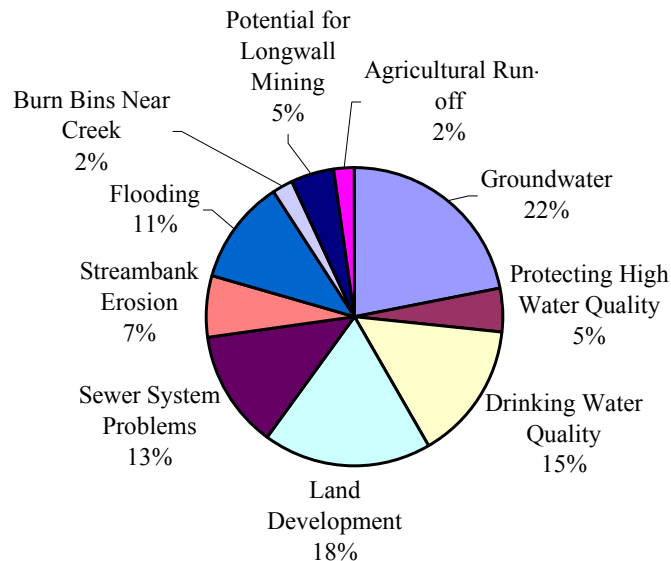
Residents often have the most insight into environmental, economic, and other issues affecting their watersheds. To get a perspective on these issues, we asked residents to fill out surveys at the initial public meeting, at the 2003 and 2004 Buffalo Creek Watershed festivals, when speaking to them in the field, and during several other events. Several other people who are regular visitors to the watershed completed surveys.

Results

Question 1: In which municipality do you reside?



Question 2: What is the most important water quality issue in the watershed?



Question 3: Number the following in order of importance with regards to future visions for the watershed (Lower composite values were considered more important).

Future Vision	Rating
Preserving Natural Habitats	2.72
Water Quality Improvements	2.77
Attractive Natural Settings	3.23
Preserving Historic Sites	3.45
Outdoor Recreational Opportunities	3.68
Educational Opportunities	4.68
New Jobs/Businesses	4.95
Community Activities	5.32
Residential Development	5.86

Question 4: List at least three positive attributes of the watershed.

Positive Attributes	Responses
beautiful streams/high quality watershed	6
abundance/diversity of wildlife and habitat	6
rural character	4
eco-tourism/outdoor recreation	3
area of lightly impacted land/pristine nature/open space	3
Important Bird Area	2
scenic value/natural appeal	2
State Game Lands	2
wildflowers	1
farmlands	1
forests	1
little modern development	1
bird habitat	1
property value	1
freshwater for water supply	1
wetlands	1

Question 5. List at least three negative attributes of the watershed.

Negative Attributes	Responses
threats of longwall mining	4
potential for urban sprawl	4
loss of Dutch Fork Reservoir	3
dumping/littering	3
pollution	2
sewage in creek/sewage problems	2
sedimentation	2
lack of knowledge and interest of natural resources by citizens	2
erosion along streams	2
destruction of habitat	1
dead animals not collected/disposed of	1
proposed development	1
attitude towards State Game Lands	1
lack of inter-community/township planning for future	1
invasive species/mile-a-minute weed	1
no covered bridge access	1
flooding	1
agricultural runoff	1
lack of streambank fencing	1

Key Issues and Management Recommendations

This section summarizes key issues and management recommendations included in the plan. Also included are potential groups that can work together to meet these goals. The groups listed as potential partners are suggestions and partnerships should not be limited to the identified groups due to ever-changing circumstances.

1. Issue: Sedimentation and nutrient enrichment is reducing the water quality of Buffalo Creek and its tributaries.

Goal: Decrease nutrients and sediment entering Buffalo Creek and its tributaries in order to preserve its High Quality designation and make it safe for wildlife and recreational activities.



Recent investigations by DEP placed three sections of the watershed on the Impaired Streams List (Integrated Waterbody List) because of nutrient impairments and sedimentation. WPC's Visual Assessment Survey of streams within the Buffalo Creek watershed found that embeddedness, or sedimentation, was the biggest water quality problem. This was the lowest scoring category out of 10 categories that measure stream health. Subwatersheds where embeddedness

was the most significant water quality problem included Upper Dutch Fork Creek, Buffalo Creek East Branch, Sugarcamp Run, Lower Dutch Fork Creek, Lower Buffalo Creek, Dunkle Run, and Brush Run.

Although none of the water quality samples taken during the WPC study exceeded water quality standards for nutrients, many approached unnaturally high conditions. These included Buffalo Creek-S Bridge; Buffalo Creek-Taylorstown; Buffalo Creek-mouth; two tributaries to Brush Run, and a tributary to Dunkle Run. Measurements of fecal coliforms, harmful bacteria that enter streams through sediment from agricultural fields and other sources, greatly exceeded water quality standards for seven out of eight sites throughout the watershed.

Suspected sources of these water quality problems include intensive agriculture on steep slopes, livestock access to streams, faulty on-lot septic systems, and removal of riparian zones.

Management Recommendations

- Use the results from the Visual Assessment Survey to prioritize areas for best management practice (BMP) projects, and work with farmers to implement such projects as streambank fencing, cattle crossings, rotational grazing, and contour farming on agricultural lands. This may include referring landowners to the Washington County Natural Resources Conservation Service (NRCS) office or Partners for Fish and Wildlife program and informing them of the Conservation Reserve Enhancement Program (CREP), which pays farmers to keep agricultural land on steep or otherwise marginal land out of production. Additional efforts may include writing recommendation letters to support grants, helping to monitor streams before and after BMP installation, conducting regular meetings with vested organizations to develop strategies, and being knowledgeable about programs offered. BMPs should especially be encouraged in Buffalo Township and other areas listed in this plan as having the greatest need for these improvements. (Potential Partners: WCCD, NRCS, BCWA, local municipalities, California University of Pennsylvania Partners for Fish and Wildlife)
- Further identify areas of malfunctioning septic systems and review municipal 537 sewage plans of local municipalities to make sure they are updated. Continue to report any obvious discharges of sewage into streams to DEP. (Potential Partners: local municipalities, BCWA, private landowners)
- Encourage municipalities to provide incentives to landowners who maintain the riparian zones of streams on their properties (reducing streambank erosion and flooding), and consider enacting riparian ordinances to prevent developers from conducting activities that contribute to streambank erosion. (Potential Partners: local municipalities, BCWA, Washington County Planning Commission, private landowners, and others)
- Be aware of logging and other earth-moving activities within the watershed and verify that Soil and Erosion Control or other permits have been obtained for these activities. (Potential Partners: BCWA, private landowners, local municipalities)
- Work with state agencies to enforce additional soil and erosion control measures downstream of the former Dutch Fork Reservoir. (Potential Partners: BCWA, WCCD, DEP)

2. Issue: Residents are concerned about their groundwater quality.

Goal: Educate people about factors influencing groundwater quality and obtain updated information about the groundwater quality within the watershed.

Public surveys found that the state of groundwater/drinking water was the biggest concern among watershed residents, yet no updated information exists about groundwater quality. Information that does exist from the Pennsylvania Groundwater Information System is from the 1980s. Sources suggest that groundwater yields in Washington County are often low and prone to mineral contamination. High withdrawals may reduce the stream flow of Buffalo Creek and contribute to groundwater availability problems.

In addition, few residents understand the link between surface water (stream) quality and groundwater quality or are aware of legitimate threats to their water quality. Groundwater quality was not thoroughly investigated in this plan, but any activities to explore this in the future are recommended.

Management Recommendations

- Circulate a survey to determine residents' satisfaction with current groundwater availability and quality.
(Potential Partners: BCWA, local municipalities, WCCD, and others)
- Conduct educational outreach about the mechanisms affecting groundwater quality and its link to surface water quality. The League of Women Voters' Water Resources Education Network (WREN) provides grants for such activities.
(Potential Partners: BCWA, WCCD, WREN, and others)
- Obtain a grant to conduct a much-needed study of groundwater quality within the watershed.
(Potential Partners: BCWA, WCCD, local municipalities, and others)

3. Issue: Opportunities exist to enhance availability and accessibility of outdoor recreation activities.

Goal: Work to provide appropriate services for outdoor visitors and to obtain funding to improve open space for residents.

The importance of the watershed for outdoor recreational activities has increased in the last several years as it has gained renown for its recognition as an Important Bird Area. Despite the recent loss of Dutch Fork Lake for visitors, there are numerous potential outdoor activities that draw people to the watershed including hiking, biking, hunting, fishing, and birdwatching. The Pennsylvania Fish and Boat Commission maintains an artificial lures only section and trout-stocked section on Dutch Fork Creek. Three Rivers Birding Club frequently leads trips to the watershed, often drawing nearly 20 people per trip. Also, State Game Lands 232 is considered one of the best public properties to hunt in western Pennsylvania, and numerous special hunting opportunities for children are offered there on a regular basis.

Many feel that the attractiveness of the area is enhanced by its lack of development, such as chain restaurants and mini-malls, and that local restaurants, stores, and other businesses in line with the

“quaintness” of local towns could prosper. However, there is a lack of public bathroom facilities and other services, as well as a lack of information for visitors highlighting recommended places to visit or the extent of public lands. Recent interviews of visitors to Dutch Fork Lake (before it was drained) revealed that even these frequent visitors to the watershed had never heard of Buffalo Creek, the Important Bird Area, or State Game Lands 232. These are issues to consider if local communities wish to bring people to the area for outdoor recreation.

In addition to these outdoor opportunities for visitors, community parks within the watershed are valuable to residents. Though not abundant, many municipalities have a baseball park or some other form of community park. At least two municipalities, Blaine Township and West Middletown Borough, mentioned that they had difficulty obtaining funds to acquire or maintain this type of open space.

There is the potential to enhance eco-tourism opportunities and open space availability within the watershed, depending on the needs and goals of local communities.

Management Recommendations

- Develop a map and guide to outdoor activities and local services within the watershed, including a birding checklist. This could be based on the map in Chapter 4 of this plan.
(Potential Partners: BCWA, Buffalo Valley Alliance (BVA), Washington County Tourism Promotion Agency, Three Rivers Birding Club)
- Encourage the development of public bathroom facilities in State Game Lands 232 or near the S-Bridge by the Pennsylvania Game Commission or appropriate agency; work with other organizations to obtain grants funds, if necessary.
(Potential Partners: BCWA, BVA, DCNR, Washington County Tourism Promotion Agency, local municipalities)
- Support local services that reflect the visions of local communities, including locally owned restaurants and stores that may help the local economy and provide services for visitors.
(Potential Partners: Landowners, local municipalities, Washington County Planning Commission)
- If Dutch Fork Lake Reservoir is recreated, encourage the Pennsylvania Fish and Boat Commission (PAFBC) to heed recommendations in Chapter 4, including repairing the road to the far access, building a pavilion, developing a strategy to reduce trash, and maintaining adequate bathroom facilities.
(Potential Partners: PAFBC, BCWA, Washington County Tourism Promotion Agency, Donegal Township)
- Obtain additional funds to provide municipal parks and places for community recreation.
(Potential Partners: Local municipalities, BCWA, BVA, DCNR)

4. Issue: The hydrology and geology of the watershed make it especially prone to flood events.

Goal: Enforce flood regulations and encourage landowner practices that reduce flooding potential.

Flooding was another major issue brought up by residents during surveys and personal encounters. Because of the geology of the area, water is quickly lost to streams during flood events. Floodplains and

vegetation along streams are important for dissipating energy during floods, and preventing further flooding downstream. However, when floodplains are built upon or devegetated, this can cause an increase in the severity of problems. Sediment transported during high stream flows can “blow out” streambanks downstream (especially if they are unvegetated) and essentially cause loss of landowner property. The situation may be worsened when culverts and bridges cannot adequately handle stream flows and sediment. Sections of the watershed with the most severe removal of riparian zone included Buffalo Creek South (along Route 3009 south of Route 40), Lower Buffalo Creek (Buffalo Creek from Buck Run to the West Virginia border), and Middle Buffalo Creek (near and through Taylorstown).

During WPC’s watershed assessment study, it was found that numerous buildings were in the flood zone and that riparian vegetation (along streams) was often mowed, or otherwise removed, by landowners. Furthermore, though most municipalities have a flooding ordinance, they are generally not enforced. If these are enforced for new subdivisions and development, this may reduce flooding problems. In addition, many municipalities in other portions of the state are devising riparian ordinances, which not only prevent building in the floodplain, but also prevent the removal of vegetation in these areas. Riparian ordinances also limit new building in floodplains of smaller streams, which can contribute greatly to flooding potential but are not covered by traditional floodplain ordinances.

Management Recommendations

- Enact floodplain ordinances or enforce current ones, if they exist.
(Potential Partners: local municipalities, Washington County Planning Commission, individual residents)
- Conduct an assessment of the capacity of existing culverts and bridges to handle flood events, including prioritization of these culverts according to which need modification, and provide these recommendations to the Washington County Conservation District (WCCD) to be used in their prioritization of funds for the Dirt and Gravel Roads Program.
(Potential Partners: BCWA, WCCD, local municipalities)
- Build awareness of the effects of riparian removal and stream straightening by developing municipal ordinances that reduce new building and vegetation removal in riparian zones, and state its importance for older properties.
(Potential Partners: local municipalities, Washington County Planning Commission, others)

5. Issue: Land-use planning does not adequately address development pressures or contain conservation objectives.

Goal: Develop a community “vision” and framework that can direct future development and place uses in their most appropriate locations.

Having mechanisms in place to direct development can make it easier once a municipality is faced with this task. Even though development pressures do not appear to be imminent, the watershed’s location between the sprawling cities of Wheeling and Pittsburgh suggests that this is inevitable. Rural municipalities often do not have the resources or time to prepare for these issues, but it is advisable to consider some actions that could make dealing with future development easier. Often, this does not mean preventing development, but it can mean allocating development to places that make sense and determining what is important to protect for the future. Depending on the community, it may be important to protect resources such as agricultural land, rural character, stream and groundwater quality, and natural areas. It may also be important to prevent building in areas that may cost more money and aggravation to the municipality later, such as floodplains, steep slopes, and hydric soils.

In this plan, information is provided that can help a municipality protect what it deems important. Municipal questionnaires showed that few municipalities have any kind of conservation zoning or controls in place. In many cases, decisions about development are made without consent of the public. Conditional use applications, which require the public to be informed of certain types of zoning applications, can help involve the public in development decisions.

Management Recommendations

- Encourage local municipalities to develop a regional approach to community planning, which may include joint-municipal ordinances.
(Potential Partners: BCWA, local municipalities, Washington County Planning Commission, individuals)
- Develop a conditional use application, which involves informing the public of certain types of development applications and involving residents in development decisions.
(Potential Partners: Local municipalities, Washington County Planning Commission)
- Encourage municipalities to conduct meetings several times a year with members of other municipalities within the watershed to discuss common concerns and potential partnerships and to view planning from a regional scale.
(Potential Partners: Local municipalities, BCWA, Washington County Planning Commission)
- Develop a team of environmental advisors to inform local communities of concerns and programs available to them; the team may include experts from different municipalities and could meet with the municipal officials several times a year.
(Potential Partners: BCWA, BVA, local municipalities, Washington County Planning Commission, individuals)
- Designate growth areas only in locations with available sewage and water facilities.
(Potential Partners: Local municipalities, Washington County Planning Commission)
- Work to develop additional partnerships between municipalities in the watershed through joint meetings and projects. This may include obtaining necessary support to get the plan included on the Rivers Registry, making municipalities and other groups eligible for additional funding for Parks and Recreation and other projects.
(Potential Partners: Local Municipalities, Washington County Planning Commission, BCWA, DCNR, others).

6. Issue: Residents value preservation of the rural character and openness of the watershed.

Goal: Develop planning goals that recognize the value of agricultural and non-developed areas and strategies for implementing these goals, including voluntary easement options, open space requirements for new businesses, and participation in already available programs.



Preserving the rural character and openness of the watershed is important to many residents. Though it would be impossible to protect all such areas, there are planning tools that can be utilized to ensure the presence of these types of lands. Municipalities can find out about options available to them by contacting conservation organizations and others dedicated to “smart growth” principles, agricultural preservation, and attractive communities. Exchanging information with other municipalities is often helpful in determining how to implement ideas.

In addition, municipal planning commissions can take a more active role in shaping development. Examples include offering easement opportunities, sponsoring studies to investigate water quality protection and planning strategies, and forming advisory committees to advise municipal officials about available options. Through the Washington County Agland Preservation Program, local municipalities can learn about and offer agricultural easements.

Management Recommendations

- Designate larger parcel sizes in areas where a more rural character is preferred.
(Potential Partners: Local municipalities, Washington County Planning Commission)
- Require new businesses to set aside open space or donate money for this purpose in exchange for an increase in building density; for instance, two homes per acre versus no more than one home per acre.
(Potential Partners: Local municipalities, Washington County Planning Commission)
- Take advantage of open space and recreation grants offered by Pennsylvania Department of Conservation and Natural Resources (DCNR) and other grant-making agencies.
(Potential Partners: DCNR, BCWA, BVA, local municipalities, and others)
- Encourage planning strategies that reflect planning goals, such as offering easements to protect agricultural land, water resources, forestland, agricultural land, and open space. Agricultural easements are offered through the County Agricultural Preservation program for lands designated as Agricultural Security Areas. There are also provisions in the Municipal Planning Code for municipalities that wish to offer easements.
(Potential Partners: Local municipalities, Washington County Agland Preservation Program, Washington County Planning Commission)

7. Issue: The management strategies in place do not protect areas of high ecological value.

Goal: Develop more detailed management plans for protecting high-quality areas on public land, and increase awareness and responsibility for maintaining the health of important natural areas on private lands.

A number of high-quality natural areas are located within the watershed. These areas contain exemplary plant communities and are able to support a variety of wildlife. Such areas include two BDAs identified by the 1994 Natural Heritage Inventory, at least six Watershed Conservation Areas having the probability of supporting species of conservation interest, and at least six relatively healthy forest blocks exceeding 100 acres. Additionally, a large portion of the Buffalo Creek valley is designated an Important Bird Area.

Because many of these areas occur on public land, opportunities exist for the Pennsylvania Game Commission (PGC) to utilize management options to protect areas. In many cases, more detailed plans are needed to protect forest-interior birds and the exceptional example habitats that are remaining. Since

most logging companies are not knowledgeable about sustainable forestry options, private landowners should be educated about harvesting timber in ways that can protect future ecological health, while ensuring economic returns.

Management Recommendations

- Continue to inform the PGC of the importance of developing management plans for portions of the game lands that contain BDAs and Watershed Conservation Areas, and maintain the integrity of the Important Bird Area.
(Potential Partners: BCWA, BVA, and others)
- Encourage PGC to protect a core area of State Game Lands 232 for forest-interior birds. Logging would be limited in this area, and only if adequate mature forest remained to support these species. Trees would be allowed to exceed financial maturity in favor of ecological maturity. Current management practices could still occur outside of this area.
(Potential Partners: PGC, BVA, BCWA, individuals, and municipalities)
- Develop a means of educating private forest owners within the watershed about forestry options that maintain healthy forests and limit the spread of invasive species; this may include holding an informational event or encouraging them to participate in the DCNR Bureau of Forestry assistance program.
(Potential Partners: WCCD, BCWA, DCNR Bureau of Forestry, and others)
- Regularly monitor high quality areas, whenever possible, to document threats and develop solutions to protect them.
(Potential Partners: BVA, BCWA, others)
- Continue to monitor wildlife diversity in the watershed, including that of mammals and other taxonomic groups where little information exists.
(Potential Partners: BVA, BCWA, local schools and universities, Important Mammal Area Project)

8. Issue: Residents are unaware of the ways in which they can become informed of proposed mining activities, and are generally unsure about their rights related to minimizing the impact of future mining activities in the watershed.

Goals: Develop a means for residents of the watershed to receive information about longwall mining permits, fully exercise the right to voice their concerns, and assure that future mining activities comply with the Clean Water Act and other state and federal laws.

Longwall mining permits are generally issued on a case-by-case basis, depending on the type of rocks, depth of coal, location of mining, and other features of the area. Within the last year, updates and clarifications have been made to Pennsylvania's Department of Environmental Protection's method of issuing mining permits, particularly for longwall mining. Residents may find it difficult to understand all of the procedures and protections that are currently in place. The BCWA and other interested individuals and organizations in the watershed should continually gather information about changes in legislation as well as current mining permits for the watershed.

The California District Mining Office operates a Surface Subsidence Agent Program, which can be contacted at any time by residents who wish to understand the extent of mining in an area or to understand their rights. Mining companies are required to inform residents six months in advance of

mining under their properties and a subsidence control plan must be developed for each proposed mining area. Additionally, the DEP's Pennsylvania Bulletin publishes notices of mining permits. Individuals with internet capabilities can receive these notifications of permit applications through PA DEP's E-facts listserve. Finally, PennFuture is an organization that provides low-cost legal advice and service to non-profit watershed groups and other similar organizations in Pennsylvania.

Management Recommendations

- Identify and develop a relationship with a Surface Subsidence Agent at the California District Mining Office that can provide information about current applications for mining permits. Provide this information to residents and communities in the Buffalo Creek watershed.
(Potential Partners: BCWA, BVA, local municipalities, individuals)
- Stay informed about the rights of residents and communities that may be impacted by mining through Surface Subsidence Agents and other knowledgeable DEP personnel. Contact PennFuture, an agency dedicated to environmental justice, to find out about other rights and obtain low-cost legal assistance, if necessary.
(Potential Partners: BCWA, BVA, individual landowners)
- Contact the Washington County Recorder of Deeds Office every six months to find out if additional mining permits have been issued in the watershed.
(Potential Partners: BCWA, BVA, local municipalities, individuals)

9. Issue: Invasive plant species pose a significant threat to native communities.

Goals: Discourage the spread of invasive species by maintaining the health of natural areas and removing invasives whenever possible.

Invasive species pose a serious threat to the natural landscapes of western Pennsylvania. Sources of invasive species include ornamental uses, non-intentional introductions that are brought in by people or objects, or purposefully planted species intended to enhance habitat. These species quickly take over the natural landscape, reducing diversity by crowding out other species and sometimes preventing healthy forest regeneration. Common invasive species within the watershed include multiflora rose, mile-a-minute weed, garlic mustard, and autumn olive. Probably the most prolific of these is multiflora rose, which is most often found in areas of old pastureland. Garlic mustard has affected forest health in locations such as Polecat Hollow, but is not as widespread. Japanese knotweed, which is one of the most difficult to control and most obnoxious of invasive species in the state, is found in only several locations within the watershed.

Since invasive species usually colonize disturbed areas, the best way to control them is to keep natural landscapes intact by employing forestry best management practices, using fertilizers properly, and maintaining natural stream water flows. Depending on the species, removal can be done by chemical and/or mechanical removal. Eventually, the spread of an invasive species is difficult to control and takes considerable amounts of time and effort. However, removal activities can be beneficial in important ecological areas. Within the watershed, the BDAs and Watershed Conservation Areas would be good locations for localized efforts. Since Japanese knotweed has not yet spread to the whole watershed, every effort should be made to remove any instances of this species.

Management Recommendations

- Conduct localized invasive species removal efforts at places of high conservation concern. For instance, the Polecat Hollow area would especially benefit from the mechanical removal of garlic mustard plants.
(Potential Partners: BCWA, BVA, other local groups)
- Write letters to the PGC encouraging them to protect against invasive species in State Game Lands 232 by limiting open canopies in sensitive areas. Also, encourage them to destroy invasive plants such as multiflora rose and alianthus in priority areas through herbicide application and other options.
(Potential Partners: PGC, BVA, BCWA)
- Mechanically remove any Japanese knotweed that is identified within the watershed.
(Potential Partners: BCWA, BVA, other local groups, individuals)
- Develop a database to document the spread of invasive species within the watershed, which would include location and name of invasive species found.
(Potential Partners: BCWA, BVA, WCCD, other local groups)

10. Issue: Continued monitoring of the watershed’s aquatic health is needed to document changes in water quality.

Goal: Develop a monitoring program that includes measuring water chemistry, stream flow, and macroinvertebrate assemblages on a regular basis.

Before this plan, little information existed about the watershed’s water quality. A year’s worth of data was collected, which can be compared to future data to determine trends in watershed health. Regular water quality monitoring can help pinpoint sources of pollution, as well as water quality improvements. Information is also needed from additional areas that were not sampled during the development of this plan. However, a program is currently not in place to adequately meet these goals.

Management Recommendations

- Identify water quality monitoring sites, and conduct at least two water quality monitoring events a year using test kits. Maintain this information in a database that can be easily referenced. Sites should include some of those identified as “impaired” in this plan. Report significant water quality impairments to DEP.
(Potential Partners: BCWA, Washington County Watershed Alliance, WCCD, local schools and universities, individuals)
- Regularly monitor and record stream flows on Buffalo Creek and its tributaries, and work with conservation agencies to install a measuring device within Buffalo Creek, which can eventually be used with regional curves to determine stream flows.
(Potential Partners: BCWA, WCCD, local schools and universities, others)
- Conduct macroinvertebrate trainings at least once a year at strategic sampling sites within the watershed.
(Potential Partners: BCWA, Washington County Watershed Alliance, WCCD, local schools and universities)

- Re-evaluate efforts in the watershed every six years by publishing an addition to this plan or a “State of the Watershed” report.
(Potential Partners: BCWA, BVA, Washington County Watershed Alliance, local schools and universities)

11. Issue: Illegal dumping occurs in more remote areas of the watershed, which is visually displeasing and can contribute to the release of harmful pollutants to the watershed.

Goal: Increase clean up of areas that are locations of illegal dumping and work to prevent future illegal dumping in the watershed.

One of the most visually displeasing sights observed during the development of the plan was the high number of locations for illegal dumping, specifically throughout State Game Lands 232. This included old tires, refrigerators, old pay phones, and other items. During recent flood events large appliances could be observed floating down Buffalo Creek. Not only are these items an eyesore, but many also release harmful chemicals to the environment. This especially diminishes the quality of natural areas such as Polecat Hollow and Narigan Run.

The remoteness of the area and large tracts of public land make areas within the watershed particularly susceptible to dumping. The PGC enforces a “no littering” policy and can identify violators through hidden cameras. However, this is often not adequate. Decreasing vehicle access to remote areas and increasing enforcement can help. Stopping all violators is likely an impossible task, but an increase in efforts could be a deterrent. In addition to prevention, cleanup efforts are already needed at many areas throughout the watershed. The Buffalo Valley Alliance holds annual cleanup events, but there is a need for additional cleanup activities by local groups and individuals. A PA CleanWays Chapter in Washington County would also be beneficial.

Management Recommendations

- Write letters to PA CleanWays and otherwise encourage the development of a chapter in Washington County.
(Potential Partners: BCWA, BVA, PA CleanWays, local municipalities, others)
- Report any known dumping on State Game Lands 232 to the PGC and encourage them to continue enforcing littering laws.
(Potential Partners: PGC, BCWA, local municipalities, others)
- Increase activities to clean up illegal dump sites within the watershed.
(Potential Partners: BCWA, BVA, schools, local groups, businesses, and individuals)
- Hold watershed-wide events where people can dispose of items such as tires and paint for a small price.
(Potential Partners: BVA, BCWA, PA CleanWays, local municipalities)

12. Issue: Many residents display a lack of awareness about the benefits of watershed protection.

Goal: Increase efforts to educate residents about watersheds and to encourage participation in watershed protection activities.

Residents often showed a lack of interest in watershed-related activities during the development of this plan. It is difficult to get information to residents in rural communities and to gather community participation. However, this is what will be needed in order for improvement activities to be successful. In many cases, residents seemed concerned that the data generated by this plan would restrict their activities. However, this plan is not a regulatory document and simply contains recommendations. Those who choose to follow some of these recommendations, such as participation in stream best management practices or wise forest stewardship, may actually benefit financially and in other ways.

Many reasons exist for gaining support for watershed protection. Those who actively participate can provide helpful information and resources that aid municipalities and watershed groups in developing protection strategies. In addition, those people who develop a personal interest in their watershed are most often wise stewards of the land and can recognize the importance of balancing conservation objectives with other goals.

Management Recommendations

- Develop a program to provide information about watersheds to local school classrooms and work with local teachers to present this information.
(Potential Partners: BCWA, WCCD, Washington County Watershed Alliance)
- Contact schools to help them organize field trips to unique places within the watershed.
(Potential Partners: BCWA, BVA)
- Conduct restoration projects that provide signage or otherwise display the importance of watershed protection and habitat and the role of Buffalo Creek Watershed Association or other organization in these efforts, such as riparian plantings, butterfly gardens, or an educational display.
(Potential Partners: BCWA, BVA, schools, and local groups)
- Develop better mechanisms for informing people about, and drawing people to, events related to watershed protection.
(Potential Partners: BCWA, BVA, DEP Watershed Specialist, WCCD)
- Connect with churches, schools, and clubs within the watershed by conducting outreach activities at their events.
(Potential Partners: BCWA, BVA, local schools and groups)

13. Issue: Practices within the watershed have resulted in alterations to natural stream patterns, which can eventually cause widening of streams and decrease habitat quality.

Goal: Implement stream restoration projects that restore degraded sections of stream and decrease streambank erosion.

Streams within the watershed have been greatly altered by land-use practices, such as building on floodplains, removing streamside vegetation, and allowing livestock access. This can cause problems such as streambank erosion, sedimentation, increased potential for building damage during flood events, and reduction in stream habitat. Stream restoration is one of the more expensive ways of fixing localized problem areas. These activities can involve physically adding curves to a stream, installing mechanisms for deflecting high water flows from banks, and planting streamside vegetation. In many cases, streams will eventually revert back to natural conditions if left unaltered for many years. However, sometimes it

is necessary to improve a stream section quickly or to restore a section where alterations downstream or upstream prevent the return to natural conditions. Pennsylvania's Growing Greener Program, and other grant programs, offers funds for stream restoration projects. Streams receiving a low score for streambank erosion and riparian zones during the visual assessment surveys would be appropriate locations for projects. Sections flowing through towns (where streambank erosion threatens buildings) and those that are particularly degraded could most benefit from restoration.

Management Recommendations

- Obtain a grant to conduct a geomorphology study of the watershed in order to determine places of highest streambank erosion and instability, where restoration projects would be most beneficial. Focus on areas where flooding potential could affect local communities and restoration projects could alleviate some of these dangers.
(Potential Partners: BCWA, DEP, WCCD, local municipalities, consulting firms)

- Conduct stream restoration activities such as riparian plantings, root wad installation, and streambank stabilization in areas containing little or no riparian zone and displaying streambank erosion or altered stream morphology (shape). These might include unnamed tributaries in Donegal Community Park, Buffalo Creek near Green Cove Wetland Area, any stretch of Dutch Fork Creek north of former Dutch Fork Lake (that is lacking a riparian zone), and Buffalo Creek downstream of the confluence with Brush Run and Buck Run.
(Potential Partners: BCWA, WCCD, local consulting firms, local municipalities, local groups)