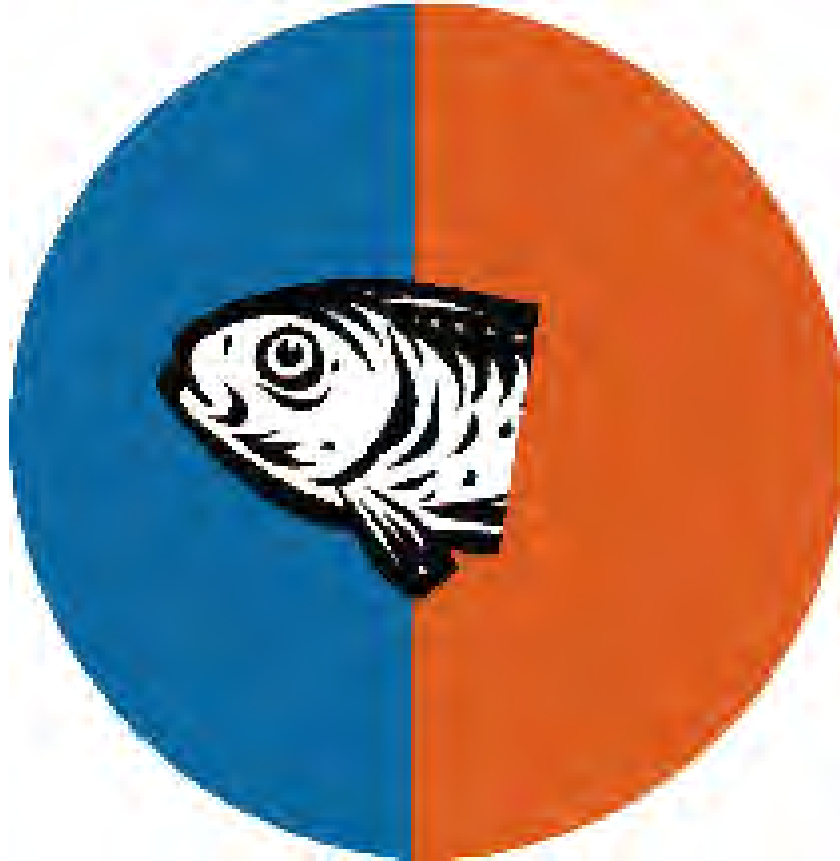


Features Associated With The
Mill Creek Watershed of
Clarion and Jefferson Counties



Prepared by the:

**Mill Creek Coalition
of Clarion & Jefferson Counties (MCC)**

Printed February 2020

**Mill Creek Coalition
of
Clarion and Jefferson Counties**

Alliance for Wetlands
and Wildlife

Conservation District
Clarion County

Conservation District
Jefferson County

Federation of Sportsmen
Clarion County

Federation of Sportsmen
Jefferson County

Iron Furnace Chapter
of Trout Unlimited

League of Women Voters
of Clarion County

Mill Creek Chapter
Nat'l Wild Turkey Fed.

Natural Resources
Conservation Services

Northwest Pennsylvania's
Great Outdoors Tourist
Promotion Agency

Seneca Rocks
Audubon Society

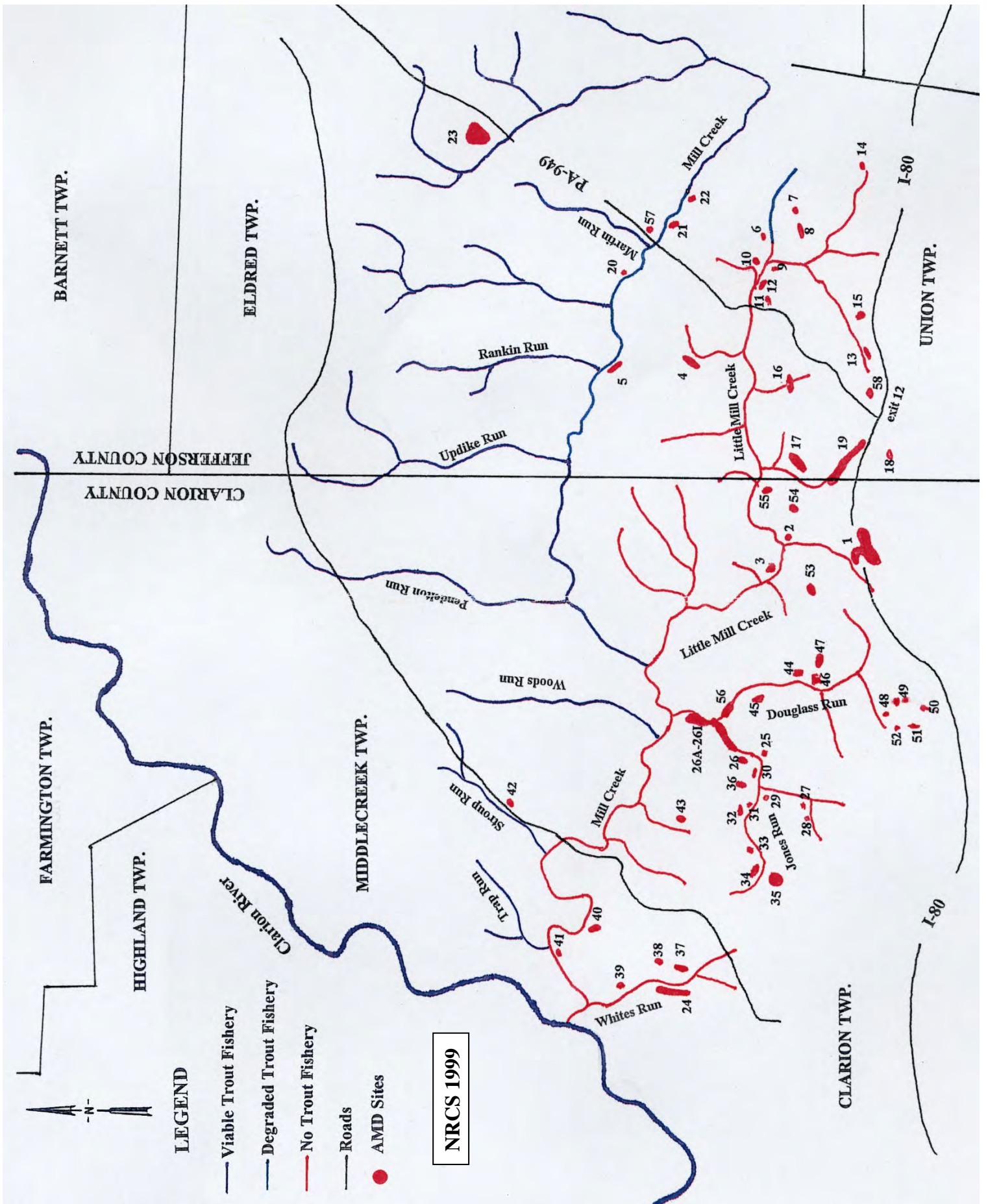
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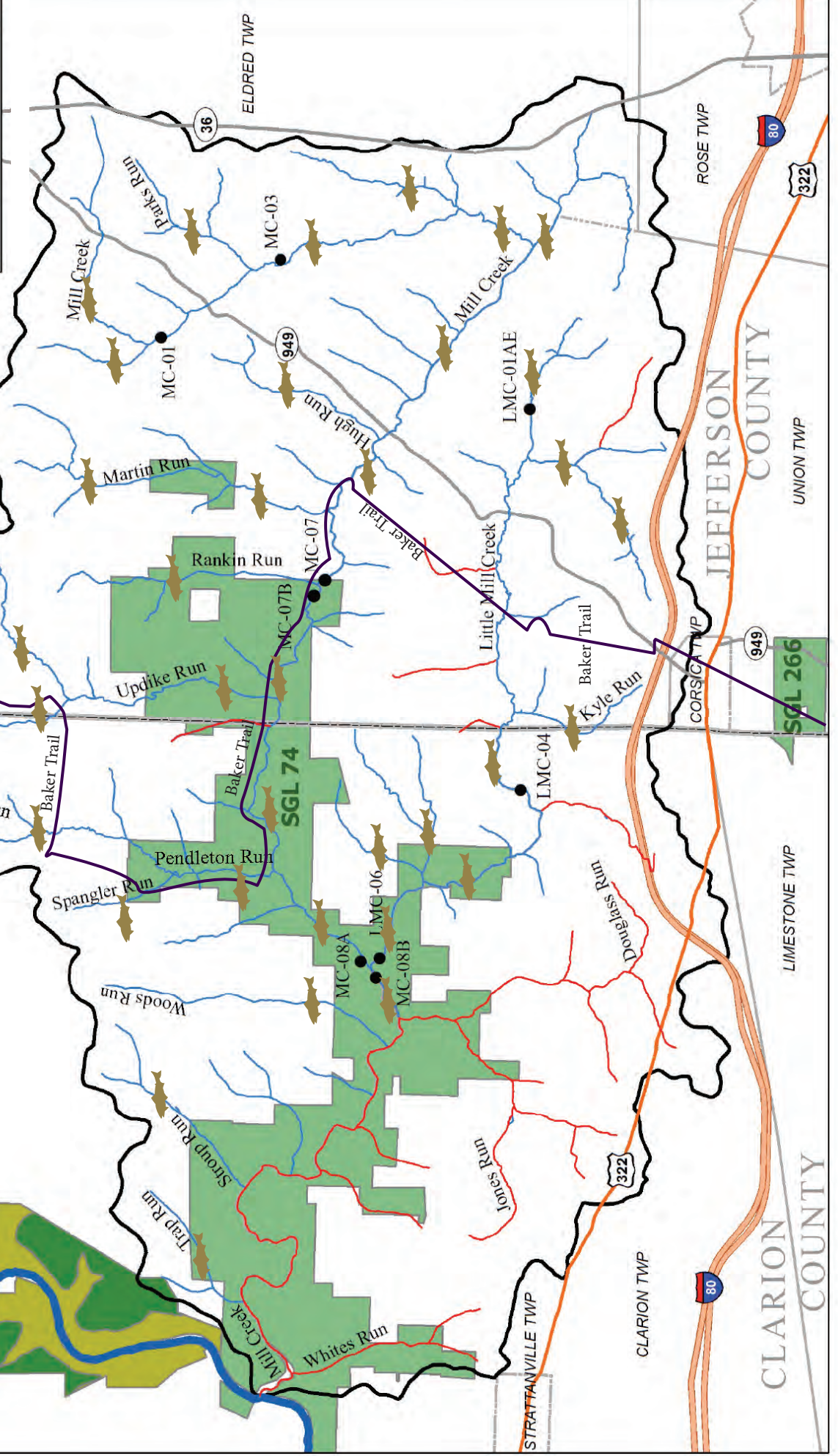
Printed February 2020



2020 Mill Creek Watershed Showing Impaired Streams, Fish, Macroinvertebrate Sample Locations and Baker Trail

Legend

- Sample Locations
- Streams
- Impaired Streams
- Highways
- State Roads
- Interstates
- County Boundary
- Municipality Boundary
- Watershed Boundary
- Cooks Forest State Park
- State Game Lands
- State Forest
- Baker Trail
- Western Pennsylvania Conservancy



FEATURES ASSOCIATED WITH THE MILL CREEK WATERSHED OF CLARION AND JEFFERSON COUNTIES

Revised February 20, 2020

- The Clarion River, once believed to be the most polluted river in Pennsylvania a century ago from mining, timbering, and industrial degradation, has gone through a remarkable transformation toward its original pristine condition. Mill Creek and other tributaries contributed to the environmental insults on the Clarion.
- Of the half dozen major tributaries of the upper Clarion River, excluding the East and West branches of the Clarion, down to the Piney Reservoir/Dam, Mill Creek is the largest tributary in Clarion County, at about 20 miles in length and 60 mi². It is only surpassed by Little Toby (Elk, Jefferson Counties) at nearly 30 miles in length and twice the square area. Both tributaries were identified in a 1980 Army Corp of Engineers report as major sources of AMD into the Clarion River Basin. Little Toby AMD problems are being addressed by another stream restoration group.
- The Mill Creek Watershed appears in the state's "High Priority List of Degraded Watersheds" published in 1997, being part of watershed 17B, a tributary of the Clarion River. It covers four townships in its bi-county drainage from portions of Clarion and Jefferson Counties.
- Directly above Mill Creek is a 52 mile section of the approximately 125 miles of the Clarion River designated in 1996 as a National Wild & Scenic River. Specifically, two sections totaling 13 miles from Portland Mills to Irwin Run, and Cooksburg to the Piney Dam backwaters qualify as "scenic". The remaining approximately 35 miles in this area qualify as "recreational".
- The state has developed an approximately 115 mile "Clarion River Water Trail" that extends from East Branch Lake in the upper Clarion River to its confluence with the Allegheny River.
- As one of the nation's Wild and Scenic Rivers, the U.S. Postal Service announced that the Clarion River is honored by being the first of a series of 12 "Forever" postal stamps in 2019 to recognize exceptional American streams which flow through their natural landscapes. The Clarion River is one of only two rivers among the 12 to be located east of the Mississippi River.

- The Clarion River has also been recognized as the Pennsylvania 2019 “River of the Year” award. The accolades noted above about the Clarion River provide the MCC with additional resolve to have Mill Creek waters contribute positively to the wild and scenic concept represented by the Clarion River.
- Directly above Mill Creek and extending 25 miles upstream along the Clarion River confluence is a 24,000 acre state forest and two very popular state parks (Cook Forest, Clear Creek).
- The Baker Trail, established in 1950, originates in the Pittsburgh area and extends as a 133 mile hiking and backpacking trail. A section of the trail passes through the Mill Creek Watershed, including along Mill Creek itself. It also passes through Cook Forest State Park and Crooked Creek State Park on its northward journey to the Allegheny National Forest. In Cook Forest State Park, the Baker Trail connects onto the North Country Trail.
- Mill Creek is the first AMD-affected watershed below the designated Scenic River segment and along with other AMD streams below Mill Creek, result in the degradation of the Clarion River as it flows toward the Allegheny River.
- The magnitude of the AMD impact in this multi-county area from coal mining is immense and no doubt helped fuel the attempt to address problems primarily associated with past mining practices. In fact, 567 stream miles in Clarion County and 179 miles in Jefferson County are affected. Also, on a square mile basis, Clarion County has the greatest proportion of AMD affected streams in the Commonwealth, with about one mile in stream length to nearly every square mile in the county. Jefferson County is about at the top quartile in AMD-affected streams. In regard to the acres of mined area compared to the total acres of a county, Clarion County is 4th and Jefferson County 7th out of 37 counties in which mining has occurred.
- Mill Creek consists of 108 stream miles of which 61 miles are AMD affected and joins the Clarion at the upper end of Piney Dam, a 12 mile long reservoir which provides water for a hydropower generation facility.
- Also, about one mile downstream from Mill Creek, the Pennsylvania Water Company has its water intake/treatment plant operation which provides potable water for Clarion and surrounding communities. Obviously, any improvement in water quality within Mill Creek has a positive effect on the reservoir waters.
- There are four boat launch sites within the Piney Reservoir, the uppermost one located at the mouth of Mill Creek. Developed by the PA Fish and Boat Commission, the Mill

Creek launch area site is very popular during the warmer months when thousands utilize this site for recreational boating, fishing, and canoe/kayak activities.

- In recent years, Cook Forest State Park started conducting canoe/kayak excursions, some of which terminate at the Mill Creek boat launch.
- The public using the Mill Creek launch site are probably unaware that the Mill Creek water at its mouth with the Clarion River is routinely 100-1000x more acid than neutral (pH 7) and laden with iron and other AMD metals. Whether examined during summer low flows of perhaps 5,000 gpm (gallons per minute) or during the wetter seasons, such as 50,000 gpm, it is nearly devoid of life at this popular boat launch site, thus affecting the Clarion waters. It is a paradox to have a popular boat/fishing launch on the Clarion River located at the mouth of Mill Creek while the final five miles of the stream still remain seriously affected by AMD and remains fishless to this point in time.
- The extent of the AMD in the Mill Creek Watershed can be characterized by mining intensity, changes in regulatory events, and overburden knowledge. Some of the discharges flow from abandoned gas wells that have been hydraulically impacted by mining operations. Briefly, the headwaters and its first ten miles of flow is in a southerly direction and has about a half-dozen AMD sources treated by a mining company through a trust arrangement. The last approximately ten miles roughly flows east to west to the Clarion River. Its 10-15 tributaries draining southward are largely unaffected by AMD. In fact, a significant tributary in this section, Pendleton/McCanna Run, is designated as a "Wildness Trout Waters." In the lower ten mile stretch, essentially everything draining northward: Little Mill Creek, Jones/Douglass Run, and several independent tributaries are all AMD affected and have received the most attention from the Coalition and DEP for the past several decades.
- The Knox District Mining Office (DMO) believed that future mining in the watershed would be minimal because of the sulfur content of the coal and overburden chemistry.
- In 1999, the Knox DMO identified five priority watersheds within the District, one of which is Mill Creek.
- Approximately 60 AMD sites have been identified on the watershed. Little Mill and Jones/Douglass have the most AMD sites, about two dozen each. Most of them on Little Mill have been addressed.
- The Mill Creek Coalition of Clarion and Jefferson Counties (MCC) came into existence after a 1990 fall conference held at Clarion University focused on the restoration of Mill

Creek from the effects of AMD. Mill Creek has two subwatersheds: Little Mill and Douglass/Jones, both seriously affected by AMD. With parts of Mill Creek in both Clarion and Jefferson Counties heavily impacted by AMD, there was sufficient interest to initiate a bi-country watershed restoration project.

- The Coalition originally identified Mill Creek as its priority watershed due to it being a serious AMD source on this section of the Clarion River as well as its large size and volume of AMD waters. The main stem of Mill Creek (from its mouth at the Clarion River and upstream through part of Clarion County and nearly two miles of Jefferson County), along with the lower portions of Little Mill and Jones/Douglass, is located in State Game Lands 74. Therefore, this 6,700 acre area is open to the public and any improvements in the watershed would be a positive public asset. It can't be emphasized enough that the trout stocking by the PA Fish & Boat Commission on Mill Creek is due to the public accessibility on Game Lands 74 and stocking only occurs on the game lands portion of Mill Creek.
- A 1980 pre-coalition study on the Clarion River Basin by the Army Corps of Engineers, Pittsburgh Engineer District, was followed in 1997 by a Clarion River Basin Study funded by DCNR via the Pennsylvania River Conservation Program, provided important information on water quality, fisheries, and other features.
- The encouragement, helpfulness, knowledge, overall support and proximity of the Knox District Mining Office (DMO) was an important factor in the formation of the MCC. This support continues to date.
- The well known environmental organizations which constitute the MCC draw their membership from individuals in both counties and therefore have a vested interest in the full recovery of Mill Creek.
- The interest for stream restoration resulted in bi-county support from the four townships, county commissioners, natural resource agencies (two conservation districts, two NRCS offices and two RC&D offices (Headwaters, Penn Soil) all of which provide an influential and talented group to guide and participate in the MCC.
- The watershed is entirely within the Pennsylvania Congressional District 5, in two State House of Representative Districts (63 and 66), two State Senate Districts (21 and 25) and four townships (two in each county).
- Over the past several years, the Coalition has invited and provided field tours for those who serve as the U.S. Representative, State Representatives and Senators, County

Commissioners and Township Supervisors. Appropriate NRCS and PA DEP individuals and groups have also been provided tours.

- A NRCS PL83-566 “Watershed Plan and Environmental Assessment” document for the Mill Creek Watershed was published in 1999 (9 years after the formation of the Mill Creek Coalition). It was estimated that the watershed contributed a significant quantity of AMD pollution into the Clarion River each year, with about 1400 tons of acidity, 245 tons of iron, and 54 tons of aluminum. This document serves as the basis for obtaining NRCS funding to address AMD issues.
- When the Coalition started its AMD treatment efforts in the 1990s, the focus was on the Mill Creek and Little Mill headwaters. The approximately \$12 million restoration improvements in the first 30 years of work in the upper portions have a positive influence on the downstream waters. Nevertheless, the last one quarter (5 miles) of Mill Creek’s 20 mile length, while improving, still does not sustain a fishery. This last link, the seriously AMD affected Jones/Douglass subwatershed, is presently being studied to determine the best strategies to address the AMD sites on this final section of the watershed.
- Once an AMD site is identified for treatment in the near future, an environmental consulting firm is contracted to study the site and recommend a treatment design. Numerous water samples are taken, particularly at low, medium, and high flows. These water samples are analyzed by a commercial water testing facility or DEP.
- After an AMD site receives a treatment system, water sampling is likely to increase in that area, particularly above and below as well as at the treatment outflow. Once established, these sites are regularly monitored for effectiveness.
- Passive treatment systems at the time when the Coalition formed were becoming popular functional realities, and the discharges on the watershed were thought to be treatable volumes and chemistries by agency and watershed restoration authorities.
- Many of Mill Creek’s tributaries and the upper 15 miles of the relatively unpolluted main stem reaching to the confluence with Douglass Run are listed on the PFBC’s “PA Wild Trout” list. In addition, most of the nine mile in length Little Mill Creek, previously heavily impacted by AMD, has been recolonized by brook trout and other biota.
- The PA Fish & Boat Commission maintains approximately 15 trout stocking points on Mill Creek, in part due to water quality improvements by the MCC and DEP. The establishment of a significant and important passive treatment site at the upper end of

Game Lands 74 at the vicinity of the Howe Road Bridge in Jefferson County allowed the reestablishment of stocking to extend another two miles downstream. In total, trout are stocked over a four mile length from Howe Bridge to Little Mill. Annual stocking in Mill Creek, all within Game Lands 74, is approximately 4,400-4,500 trout with a pre- and two in-season stockings. Mill is the only trout stream draining into the Clarion River which receives two in-season stockings. More stocking points, if water improvements continue, could be extended within Game Lands 74, encompassing the approximately last five miles of Mill Creek from Little Mill to Mill Creek's mouth with the Clarion River. As it is, Mill Creek is a premier and very popular stream for trout enthusiasts.

- With so many AMD sites, a general strategy was established to determine priorities. In Mill Creek itself, the upper 10 miles were in reasonably good shape with DEP working on agreements with two mining companies responsible for about a half-dozen AMD sites. Noted earlier, all were suitably addressed, with one company agreeing to the formation of a trust fund. The next significant site was about two miles downstream, the Howe Bridge site.
- Mill Creek waters are then of good quality until AMD-affected Little Mill enters Mill Creek. Little Mill has nearly two dozen AMD sites on its mainstem and tributaries. Because a few of the uppermost mainstem and tributaries have isolated fish and macroinvertebrate populations as well as available spawning and nursing grounds, the Coalition generally focused on the upper end of Little Mill so upper tributary populations were no longer isolated. Populations could now merge and recolonize lower stream waters as AMD treatment sites were established. From the lower end of Little Mill, Mill Creek's more physiologically tolerant fish and macroinvertebrates started to recolonize the lower reaches of Little Mill, eventually reestablishing a viable and valuable upper stream community, as well as the appreciation of the land owners. At this point in time, the Coalition is successfully maintaining the treatment systems and focusing more attention on the headwaters of the Jones/Douglass subwatershed, with half of the acreage as Little Mill, but with the same approximate number of AMD sites. When that is accomplished, the last 5 miles of Mill Creek will be mainly recovered.
- With about 30 tributaries on Mill Creek itself, plus others off of Little Mill Creek and Jones/Douglass, DEP and the Coalition identified about 60 priority monitoring points by 2004. Baseline data were collected with additional monitoring points added when necessary as the DEP and Coalition shifted its efforts to various locations on the Mill Creek Watershed. Sampling intervals range widely, based on DEP and Coalition needs. All samples were analyzed by DEP.

- The Mill Creek Coalition has produced a number of documents. One is the 2011 “A 20-Year (1990-2010) Review of the Accomplishments of the Mill Creek Coalition of Clarion and Jefferson Counties, with a Five-Year Plan for 2011-2015”. The second is the 2015 “Mill Creek and Little Mill Creek of Clarion and Jefferson Counties Macroinvertebrate Assessment, October 2012, Along With an Overview of Water Quality and Fisheries Improvements Over the Past 25 Years of the Mill Creek Coalition”. A third document in 2016 entitled “Assessment of AMD Discharges in the Downstream Section of Little Mill Creek, Clarion County, PA” was published. Most recently, in 2019, a report entitled “Final Report of a Pilot Project on the West Branch of Jones Run, Mill Creek Watershed, Clarion County: Stream Application of Code 60 Limestone Fines into an AMD Affected Stream” provides the results of this study.
- Also, the MCC benefited from a “Mill Creek Watershed Assessment of an Acid-Mine Drainage Abatement Project in Clarion (ed. note, also Jefferson) County: Final Report”. This assessment project, funded in 1999, was made possible by a grant from the Center for Rural Pennsylvania, a legislative agency of the Pennsylvania General Assembly. Published in 2001, it included among a number of topics, an assessment of the passive treatment systems and their impact on stream water chemistry and invertebrate and fish communities up to 1999. Included is “A Users Guide for the Mill Creek Watershed Water Quality Database”.
- To follow the mandate of federal section 303(d) of the Clean Water Act (which requires Pennsylvania to establish water quality standards), five TMDLs (Total Maximum Daily Loads) have been completed in the watershed by DEP’s Knox District Mining Office and approved by the EPA: Whites Run, Jones/Douglass Run, Parks Run, Little Mill Creek, and lastly, Mill Creek, published in the Pennsylvania Bulletin in the fall of 2008, and approved by EPA in 2009.
- Clarion and Jefferson Counties are part of “PA Wilds”, a special state designated multi-county region noted for many natural resource attractions. Established in 2004, funding is available to promote and develop outdoor recreational opportunities. The Mill Creek Watershed receives its share of attention because a large part of it is in State Game Lands 74, the PA Fish & Boat Commission stocks trout in a significant length of Mill Creek, and because the Commission has a boat launch at the mouth of Mill Creek providing public access to the lower segment of Mill Creek and Piney Dam Reservoir.
- The MCC from its inception did not wish to receive or administer grant monies due to limitations of time and expertise of its officers. Fortunately, with NRCS as a Coalition member as well as two conservation districts (Clarion and Jefferson) and two RC&D trusts (PennSoil and Headwaters), arrangements were made very early in the Coalition’s

formative months to have the Headwaters Charitable Trust agree to serve as the administrator and co-writer of most grants. Headwaters has experience with AMD issues, has the administrative personnel, and most of the Mill Creek AMD sites fall within its jurisdictional boundaries.

- With three decades of restoration activities conducted on the Mill Creek Watershed, it has provided numerous opportunities for hundreds of school children, university classes, graduate students, and the community to make use of this living laboratory and its educational and recreational potential continuing well into future decades. The watershed provides an excellent outdoor classroom for the students of our school systems as well as Clarion University. Notably, the Brookville and Clarion-Limestone public schools serve students within the watershed.
- The MCC is pleased that nearby Clarion University students and faculty are involved in Mill Creek educational and research opportunities. MCC has worked with a number of upper-level undergraduate students, many of whom have pursued graduate studies. Nearly all of them have become employed in some field of aquatic ecology. In addition, five Master's degree students have conducted their research projects on the watershed. Several Clarion University biology courses utilize the watershed for lab exercises and independent studies. The MCC and faculty/students at Clarion University periodically sample segments of Mill Creek (AMD affected and non-AMD affected segments) for fish, using minnow trapping and electrofishing techniques in order to monitor population health and recolonization patterns. Aquatic invertebrates are occasionally monitored.
- The Iron Furnace Chapter of Trout Unlimited has established a number of successful "Trout in the Classroom" programs in the high schools of Clarion and Jefferson Counties. Clarion-Limestone and Brookville high schools, are located close to the Mill Creek Watershed. The Coalition will work with the PA Fish & Boat Commission personnel and the schools to identify appropriate sections of Mill Creek to release these minnow-sized trout.
- The PA Fish and Boat Commission also participates in those investigations in which students are encouraged to assist as part of a "real life" experience. In the future activities of implementing and completing the restoration of Mill Creek, educational opportunities will continue to be an important benefit of the MCC's long term efforts.
- The MCC established a fundraising "Ducky Race" in 2013 on Mill Creek. It partners this spring event with the student chapter of The Wildlife Society at Clarion University. Held in late April-early May, it is a popular family oriented activity. The local Walmart is the primary sponsor, followed by other smaller businesses in the area.

- At this time, about 40 projects (several with multiple AMD discharges) have occurred that have resulted in a positive change to the watershed. These include the construction of passive treatment systems (24 sites), the continuation of active treatment systems originally constructed by a defunct mining company with their present operation supported through a DEP-negotiated trust (6 sites), a DEP site (monitored by the Knox DMO) with two discharges treated with a concentrated lime slurry delivery system, DEP (BAMR) treatment of 3 sites using passive treatment technology, re-mining (4 sites), the re-contouring, adding of alkalinity to disturbed overburden and revegetation (1 site), incorporating heavy applications of lime to the surface of previously mined sites (2 sites), the placement of high-quality calcium carbonate fines into the west branch of Jones Run to address high acidity and modest metal issues, and the plugging of abandoned gas wells (2 sites). In addition, Little Mill Creek has benefited from four mining/re-mining projects from 2003-2005 by four different mining companies. While mining, previous high walls were eliminated, alkaline material was added to overburden and soil, surface water runoff efficiencies were improved, and pools of acidic water within the permitted areas were eliminated. The roughly \$12 million that has been invested in the Mill Creek watershed excludes the approximately \$100,000/year cost by the aforementioned trust to maintain active chemical treatment on the six sites formerly treated by a coal company, and also approximately \$70,000/year to maintain the lime slurry site.
- While the PA Game Commission is a steward of about 10 mi² within the watershed as Game Lands 74, another 50 mi² (over 80%) are in private ownership. Except for two AMD treatment sites on Game Lands 74, all the others are located on private land. The public as well as the property owners benefit from the restoration efforts on those once affected AMD streams which course through the watershed, presently adding value to the property as well as the opportunity for the stream to be enjoyed once again by family, friends, and visitors. Landowner cooperation will never be forgotten as the Coalition enters its fourth decade.
- While fishing for trout is definitely popular, with a potential for more “trout miles” on Mill Creek, another mark of success is when families bring their folding chairs and lunches to spend some hours along a tributary or Mill Creek itself. Children should be able to play in the clean waters most anywhere in the watershed, cooling off on hot days, searching for crayfish, chasing minnows, skipping stones, damming parts of a stream, splashing each other, tossing sticks or balls in the water for their dog to retrieve, throwing beach balls back and forth with the family, or just enjoying the solitude of the moment.

- The tributaries drain the watershed and are the life blood of any watershed. In their pristine condition, the tributaries provide local drainage and in so doing, carrying minerals and organic materials (leaves, twigs and other woody materials) which can be utilized as food or cover by the local organisms as well as transported further downstream in support of those organisms. If the tributaries receive AMD, then it too is transported downstream. These tributaries have their own unique flora and fauna as well as providing breeding and nursing needs for its own blend of the same and different species inhabiting the larger waters. The presence of AMD can substantially change the chemical and physical characteristics, thus changing/eliminating local life forms. On the Mill Creek Watershed, a number of the tributaries are reasonably sized and in a suitable topography for a passive treatment system, thus improving the tributary's water quality, as well as having a positive effect for miles downstream.
- In recent years, the PA Fish & Boat Commission has updated its past water quality work on the watershed, and with the Coalition, has electrofished nearly all the tributaries to determine the presence of Brook Trout and other fishes.
- Researchers, including MCC members, have attended and presented papers and displays at a number of state, national, and international meetings.
- Recognizing the need to improve and upgrade the performance of the Coalition's older passive treatment systems, EADS and Dietz-Gourley Consulting were funded to provide an OM&R (Operation, Maintenance and Rehabilitation) document that was completed in 2006. Another updated version is currently being developed. This 2020 document (DEP's Qualified Hydrological Unit Plan (QHUP) helps the Coalition set priorities as to which sites need repair, upgrading, or replacement, and also will allow the Coalition to access federal set-aside funds to address future AMD projects to complement DEP's Growing Greener criteria.
- As part of an OM&R plan, all treated sites are also evaluated on a regular basis. This yearly survey is primarily conducted to address normal maintenance issues and to monitor longer anticipated issues.
- The Headwaters Charitable Trust of Headwaters RC&D has provided to public officials and DEP several reports that provide positive economic cost/benefit analysis based upon the restoration successes on the Mill Creek Watershed.
- The Coalition and others continue to share with DEP the need to establish watershed trust funds to maintain long term operation, maintenance, and rehabilitation (OM&R)

commitment to those watersheds which have succeeded in reaching the goal of a viable coldwater fishery throughout all or most of a recovered watershed.

- The Coalition knows that it can not run to government to solve all of its financial needs. It also recognizes that government often encourages cost-share arrangements. The Ducky Race provides some income to support Coalition priorities. The Coalition has also established a relationship with a regional foundation, the Bridge Builders Community Foundations. People interested in financially supporting the Coalition can contribute to this 501(c)(3) foundation. Bridge Builders is also firmly committed to promoting the annual “Week of Giving” tradition held in March within this geographical area.
- The 30 years of restoration work on Mill Creek waters is reaping positive results, as have been the Coalition’s community outreach via meetings. Well over 100 newspaper articles have been published in the Clarion News (Clarion Co.), The Derrick (Venango Co.), and Jeffersonian Democrat (Jefferson Co.) as well as other articles in Clearfield, Erie, and Indiana counties. Additional articles have appeared in Pennsylvania Trout magazine (1992), National Wildlife Federation’s The Leader (1993), Pennsylvania Resources (1994), Pennsylvania Game News (1994), and the quarterly newsletter of the Society for Ecological Restoration (1994). The restoration efforts on Mill Creek were featured on ESPN On the Fly (1994). A 1995 issue of Trout (national Trout Unlimited magazine) featured an article on the restoration of Mill Creek and Trout Unlimited’s role in the Mill Creek Coalition. In 2019, Clarion University’s Clarion Magazine published a feature article about the Mill Creek Coalition and its achievements.
- The MCC has received a number of awards as recognition for its successes and sustained long-term efforts to establish a coldwater fishery throughout the watershed. Some of these awards include: In 1992, the Coalition received the “Pride in Pennsylvania Award” from the Pennsylvania Association of Conservation District Directors. In 1993, the MCC received the Conservation Organization of the Year from the Pennsylvania Wildlife Federation, the Watershed Protection Award from the Pennsylvania Association of Conservation Districts, and received a “Certificate of Recognition” from the Northwest Section of The Wildlife Society. In 1996, the “Gold Trout Award” was given by the national Trout Unlimited to the local chapter in recognition of the Coalition’s watershed restoration achievements. In 1998, it received the Three Rivers Environmental Award from the Pennsylvania Environmental Council followed by the Governor’s Award for Watershed Stewardship in 2002.
- As a result of the above achievements, the Mill Creek Watershed can be characterized as well along on its recovery to a coldwater fishery throughout its entirety. However, recovery implies much more than reducing acidity and metal concentrations. Like other

severely compromised AMD streams, Mill Creek was characterized by not only a lack or paucity of fish species, but the loss of much of the original benthic flora and fauna (i.e., the base of the food chain). Mussels are essentially non-existent. The amphibian community is AMD compromised as is the reptilian one (some snakes feed on fish and amphibians, as do snapping turtles). The year 2018, dubbed “Year of the Bird” by many U.S. conservation organizations, brought attention to the centennial of the Migratory Bird Treaty Act. Birds benefit from restored aquatic habitats. Species such as the Bald Eagle, Osprey, Great Blue Heron, Belted Kingfisher, Wood Duck and other waterfowl as well as a host of migratory songbirds which feed on the stream’s insect community are returning. For mammals, the raccoon, mink and otter are largely dependent on the food resources of clean waters. Humans value clean waters for fishing, swimming, canoeing/boating, childhood activities, and the opportunity to appreciate the diversity of life associated with clean water. It is the intention of the MCC to work with governmental agencies and the community to continue promoting, developing and maintaining a long-term financial commitment to ensure that the Mill Creek Watershed continues on its long-term journey toward recovery and sustainability.

SUMMARY

The Mill Creek Watershed can be characterized as the “People’s Watershed”. It is minutes away from Clarion and Strattanville (Clarion County) on its southwest border, with Brookville and Corsica (Jefferson County) on its southeast border. Located along I-80, these towns serve as portals of entry to the state-designated “Pennsylvania Wilds” which encompasses this multi-county great outdoor recreational region of the Commonwealth. Mill Creek’s western border provides the public recreational opportunities of the Piney Reservoir, the PA Fish and Boat Commission’s public launch site at the mouth of Mill Creek, followed upstream by the 6700 acre public (people’s) game lands of the PA Game Commission. Game Lands 74 extends about 10 miles upstream, about one-half of Mill Creek’s total length. The villages of Fisher and Kahletown are located on its northern side, with Rte. 36 on the east side.

Within the 60 mi² watershed is a rural community of farms, homes, vacation retreats and camps interspersed throughout the area, along with local businesses. The watershed provides the water resources for those who live or visit within its perimeter. Hunting is popular and a passion during the various open seasons; even the poorly reclaimed mining sites of past years provide successful hunting opportunities due to some vegetational cover and forage recovery. The native Brook Trout and the nearly 5,000 fish stocked annually attract those fishing enthusiasts who can access the stream via the public game lands. The Baker Trail, which originates in the Pittsburgh area, traverses the watershed and continues northward to connect with the North Country Trail in Cook Forest State Park. The trail attracts hikers and campers who enjoy the

option of primitive camping and the opportunity to cast a line into Mill Creek. Parts of four townships are the caretakers of the secondary roads which service the people inhabiting/visiting the area.

The Mill Creek Watershed has gained the economy of scale of a riverine ecosystem because of the area and the topographical diversity through which it flows. However, the biological diversity of its lands and waters has taken a toll primarily due to past coal mining practices, notably in the southern portion of the watershed. Nevertheless, it has the potential to once again recover to its earlier values through continued restoration efforts. It has only to mirror the remarkable transformation of the Clarion River which was a foul river of AMD, municipal effluents and industrial pollution. As noted earlier, the river has a significant length with national scenic and recreational status, a “Clarion River Water Trail”, and in 2019 was selected for the first of a U.S. postal stamp series recognizing exceptional American streams. It also received in 2019 the Pennsylvania “River of the Year” award. The restoration of Mill Creek will aid in the Clarion River’s continuing value for recreation and other uses.

So, what does the future hold for Mill Creek, the “People’s Watershed”? Certainly the same successful recovery can occur with Mill Creek as with the Clarion River, thereby improving the economic, aesthetic, and recreational values of the watershed, and in so doing, contribute to the continued improvement of the lower Clarion River. The nearly three decades of efforts by the Mill Creek Coalition and its local, state and federal partners to restore the watershed certainly demonstrate that the “People’s Watershed” is well along toward gaining a full recovery comparable to the Clarion River.



The inaugural placement of high quality limestone fines into the West Branch of Jones Run to address AMD in this headwater stream, 2018. Photo by Brett Whitling, Clarion News.



The Ducky Race on Mill Creek, started in 2014, provides an opportunity for local citizens to become engaged in the rebirth of the watershed. Photo credits: Freelance writer Laura Lynn Yohe (left), and Tom DiStefano, The Clarion News (right).

Clarion County fisherman John Street tests the waters for brookies on Mill Creek in the vicinity of Pendleton/McCanna Run and Old State Road Bridge in the early 1990s. The pH in this stream section is in the 6s with iron about 0.5 mg/l.



A local family enjoys a respite from the afternoon heat of a hot September 2015 day by relaxing on the shoreline and cool waters of Mill Creek in the vicinity of Pendleton/McCanna Run and Old State Road Bridge.

ACKNOWLEDGEMENTS

As a 30 year old organization, the Mill Creek Coalition of Clarion and Jefferson Counties (MCC) has a nearly limitless number of individuals, politicians, businesses, agencies, conservation groups, and other entities that are responsible for the MCC's successes.

Those individuals which represent the Coalition's member groups by attending monthly meetings or via e-mail etc. correspondence are gratefully acknowledged. They have provided the leadership to the Coalition and informed their respective organizations and agencies of the Coalition's activities over the past 30 years. Other individuals have embraced the Coalition by allowing their property to be used for treatment systems or to be trekked upon for water sampling purposes, or by simply serving as a inspiration by the remarks about observing cleaner water and fish where fish have not been noted for decades. It is also the individuals who represent the businesses and agencies which are interacting with the Coalition; without exception, they have done and continue to do a superlative function in support of the Coalition.

Politically, the MCC has had positive experiences at all levels. Township supervisors in all four townships within the watershed have been supportive of the Coalition's efforts by approving road bonding requests by contractors, assisting in some road modifications, etc. when necessary, and just by stopping by from time to time when site construction is underway to show their interest and encouragement toward efforts to improve the waterways within their jurisdiction. The townships also assist in the selling of Ducky Race raffle tickets each year.

A series of county commissioners have been invaluablely supportive over the years. Of particular appreciation are those three commissioners each from Clarion and Jefferson Counties that placed their signatures on a NRCS PL83-566 document in 1999 that was prepared through the primary aid of NRCS personnel. This document provides a comprehensive and ambitious plan for the recovery of the Mill Creek Watershed, including funding opportunities. Many of them have been on Coalition-led field trips to Mill Creek over the years.

The MCC's business experiences are primarily of two types: environmental consulting firms and AMD passive system construction contractors. Over the years, the Coalition has relied upon three very competent environmental consulting firms, all of which have taken "ownership" of the watershed, often providing site visits, extra meetings and other services above and beyond contractual agreements. Damascotta, Hedin Environmental, and Deitz and Gourley (now associated with Tetra Tech) have received most of the design and construction oversight contracts over the years and are professionally recognized by their peers, incorporating the newest design concepts into the treatment systems.

Similarly, over the years, a half dozen construction firms have consistently provided competitive bids and excellent service. Invariably during the construction, unforeseen circumstances arise where such things as extra hours, changes in design and other challenges

need to be addressed. These items, along with inclement weather, mean that the contractor may have unforeseen delays and need to rely upon a dose or two of additional patience to finish a job. A few have donated extra time of themselves and their equipment. Their job performance and enthusiasm are truly appreciated and acknowledged.

Starting in 1991, the PA National Guard played a very critical and important role in the earliest years of the Coalition. Through the participation of Company B, 876th Engineer Battalion, located in Punxsutawney, the unit donated its men and machinery for most of the construction at the first four AMD sites the Coalition addressed. Long weekends and local encampments the first several years allowed for low construction costs and a big return in regard to marked improvements in water quality. Such a spurt of activity and successes caught the attention of many and raised some realistic hopes that indeed the water quality of the Mill Creek Watershed could be markedly improved. Thanks and gratitude go to the many members of the battalion, as well as the leadership and commitment from the upper levels of the Guard for nearly instantaneously helping the Coalition become noticed locally and at the state agency levels.

There are three governmental agencies which have been instrumental in MCC's water improvement successes: DEP, NRCS and OSM. DEP's involvement is varied. The Knox District Mining Office (DMO) has been extremely supportive in myriad and valuable ways from the very beginning. The office allows its members to attend MCC meetings when requested, has forwarded in lieu of civil penalty monies to the MCC, has spent many hours "in the field", either collecting water samples themselves or allowing MCC members to do so, with the water analyses conducted by DEP's lab, have on occasion provided emergency monies when a treatment system construction project ran into a roadblock, have completed all the TMDLs on the watershed, and listened to our concerns when a mining application on the watershed is being considered. The office oversees the treatment of six AMD sites via a trust fund established with a past mining company. In addition, the Knox office was heavily involved with the Coalition in the planning and eventual construction of an active treatment system which addresses two adjacent AMD sites which are DEP's responsibility. The Knox office oversees the operation and maintenance contract for the sites. The MCC gratefully acknowledges the management and employees of the Knox DMO who have been involved with the MCC over the years.

DEP's Growing Greener program has provided a significant amount of funding for Mill Creek, and it would be virtually impossible to have the successes in the watershed without that financial support. The Bureau of Oil and Gas investigated a number of possible abandoned gas wells itself or through contract and successfully plugged two documented wells. The EPA 319 monies transferred to DEP have been most helpful in meeting O&M needs of the passive treatment systems over the years. DEP recently developed a Qualified Hydrological Unit Plan (QHUP) which is being prepared by the Coalition. This plan updates prior plans used by DEP and provides opportunities for more funding. Lastly, BAMR and the personnel that interact with the

Coalition have been instrumental in taking responsibility for the total design and construction costs of three passive treatment systems and one re-contouring, liming, etc. of a previous mining site. In addition, many day-long trips to the watershed in order to take water samples and flow rates have been conducted over the years. The interest and professionalism of these personnel in the office and field are gratefully appreciated and acknowledged.

The two conservation districts (Clarion, Jefferson), two RC&Ds (Penn Soil, Headwaters), two NRCS District Conservationists and Harrisburg NRCS have all been absolutely essential to the success of the MCC. Totally, the plethora of knowledge, expertise, enthusiasm and services provided are outstanding. Kudos are extended to the Headwaters Charitable Trust (Headwaters RC&D) because of the many grant writing and administrative services provided, since most of the treatment systems are within their jurisdiction. The District Conservationist who services Jefferson County has provided an extraordinarily huge amount of time with the MCC due to the number of AMD sites in that portion of Little Mill Creek which is in the county. In addition, the several PL83-566 awards received took a substantial amount of Coalition, District Conservationist and Harrisburg NRCS time to meet award guidelines. Yet the benefits far outweigh these inconveniences. It was mainly through the efforts of these entities that the PL83-566 watershed plan was completed, a somewhat lengthy process that resulted in an invaluable document. From the District to the Harrisburg level, a heartfelt thank you is extended. Both conservation districts have been helpful in many ways, such as by assisting in the field, writing mini-grants, and support letters as well as assisting in the development of poster and PowerPoint presentations.

The personnel in the state office of the OSM have assisted the Coalition in several important ways. When the appropriate criteria are met, the Coalition can count on OSM doing its best to come up with matching monies for many of the projects. By visiting the watershed on occasion, the agency understands MCC's needs and has the expertise to offer technical advice. OSM's involvement and commitment to the Mill Creek Watershed and the MCC over the past three decades is gratefully acknowledged.

The PA Game Commission and Fish & Boat Commission have been supportive from the very beginning. With much of the lower watershed in Game Lands, the PGC has an interest in the quality of water which courses through its property. The first passive treatment system constructed on Mill Creek is unique in that a portion is on both private land and Game Lands 74. The PGC allows Coalition members to have gate access to service roads which provide an easy and convenient means to get to segments of Mill Creek for water sampling and electrofishing purposes. The PFBC is aware of the improved water quality observed over the years. Due to these improvements, it reestablished trout stocking locations several miles upstream and has electrofishing monitoring points throughout the watershed. The Coalition thanks those many personnel at the local, regional and state levels within these two agencies, for providing their support and encouragement.

There are some quasi-agency groups who have assisted the Coalition by providing small grants and technical support to meet the needs of the Coalition. Applications tend to be brief and acceptance/rejection is known in several days or short weeks. These groups include TU's AMD Technical Assistance Program, WPCAMR (Western PA Coalition for Abandoned Mine Reclamation), Foundation for Pennsylvania Watersheds, the Western Pennsylvania Conservancy and others. They provide a valuable unique niche of assistance not generally offered by state and federal agencies. Thank you!

In no small way, Clarion University has played an important role in the successes of the MCC. Support has come from the administrative and departmental levels. Several AMD associated conferences have been held on campus including the one in the fall of 1990 that was instrumental in the formation of the MCC. The Biology and AGES (Anthropology, Geography & Earth Science) Departments are acknowledged for providing students, faculty, office and lab facilities. Faculty in AGES have directly participated by providing GIS and mapping expertise for students and Coalition members. The Biology Department provided lab space for water chemistry analyses, files, space for work study students, field equipment, etc. Nearly a half dozen active and retired faculty have expertise in areas such as fisheries, aquatic insects and water chemistry. Some from the Biology Department have participated in the MCC via leadership positions, working with students on research investigations, and taking class field trips to Mill Creek.

Over the past 30 years, there have been occasions when minor legal services were required. The MCC acknowledges the assistance provided by the Brookville office of Dennison, Dennison & Harper in those instances.

The MCC member groups have an integral role in the formation and function of the Coalition over the past three decades. Their interest, leadership and monetary assistance are important as well as the diversity of expertise and experiences they bring to the MCC, all of which are invaluable and much appreciated.

The Mill Creek Watershed has a strong base of shareholders within the Coalition itself, as well as among the outdoor visitors and residents of Clarion and Jefferson Counties. Shareholder numbers have increased in the area, thanks to newspaper accounts, radio interviews, the popular Ducky Races, field trips open to the public as well as those provided through school and university activities. This broad level of interest and support by individuals, groups and businesses throughout the bi-county area and beyond are encouraging and deeply appreciated and acknowledged by the MCC.

Mill Creek has benefited from the fact that the Coalition participates in a number of national, regional and state conferences dealing with AMD and watershed restoration. Some of these include the 1994 Joint International Land Reclamation and Mine Drainage Conference (Pittsburgh), the 1994 Acid Mine Drainage Workshop (Morgantown), the 1995 Conference on the Mid-Atlantic Highlands Environment Now and Tomorrow (Davis, WV), and the 1996

meeting of the National Coalition for Abandoned Mine Reclamation (Pittsburgh). In September 2019, it participated in the Abandoned Mine Land and Reclamation Joint Conference, a national meeting held in Pittsburgh. The Coalition also participated in a number of AMD-oriented meetings over the years held in Meadville, Clarion and State College. For years, one or more members of the MCC have attended/participated in the yearly Conference on Abandoned Mine Reclamation held in State College. This annual conference continues since its formation in 1998. As with any professional organization, these meetings provide opportunities to share knowledge and to interact with appropriate agency officials on a more informal basis. Thanks to those who have attended/participated and/or were involved in the planning aspects of some of these meetings.

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CONTRIBUTORS TO THE MILL CREEK COALITION'S EFFORTS IN THE MILL CREEK WATERSHED

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CLARION COUNTY FEDERATION OF SPORTSMEN'S CLUBS
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