

# **THE FISHING RUN RESTORATION AND MAUDE MINE RECLAMATION PROJECT**

## **LOCATION**

Problem Area PA 4422, Project Number OSM 02(4422)102.1  
South Fayette Township, Allegheny County, Pennsylvania

## **SUBMITTED BY**

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## **PROJECT START DATE**

November 17, 2005

## **PROJECT COMPLETION DATE**

December 31, 2007

## **CONSTRUCTION COST**

AML Funds - \$327,628  
Allegheny County Conservation District Funds - \$5,000

## **PROJECT PARTNERS**

PA DEP, Bureau of Abandoned Mine Reclamation  
South Fayette Conservation Group (SFCG)  
Chartiers Nature Conservancy (CNC)

## **CONTRACTORS**

GAI Consultants, Inc.  
Pittsburgh, PA

Hedin Environmental.  
Pittsburgh, PA

Kosky Construction  
Cuddy, PA

## **DATE SUBMITTED**

March 15, 2008

## Executive Summary

The Fishing Run Restoration and Maude Mine Reclamation Project site is located in South Fayette Township, Allegheny County, Pennsylvania, within the lower section of the Chartiers Creek Watershed. The watershed lies southwest of the City of Pittsburgh in the western suburbs. The location of the project with respect to the City of Pittsburgh and the Chartiers Creek Watershed boundary is shown on Figure 1. Significant community interest and support facilitated this project. A local watershed group, the South Fayette Conservation Group (SFCG), initiated the project through a grant application and ensuing partnership agreement with Pennsylvania Department of Environmental Protection, Bureau of Abandoned Mine Reclamation (PA DEP BAMR). Previous watershed studies and abandoned mine land (AML) inventory work by PA DEP, SFCG and the Chartiers Nature Conservancy (CNC) identified this site as having significant adverse impacts to water quality and high-priority AML features that posed a significant threat to public health and safety

The project reclaimed several OSM priority 2 AML features including an open portal, a partially sealed mine opening, approximately 1,500 linear feet of dangerous highwall and numerous dilapidated coal preparation plant and coal load-out structures. In addition, the open mine portal was capturing all of the flow from the upper portion of a clean water stream called Fishing Run which is a tributary to Millers Run. The stream flow exceeded 2,500 gpm during the spring of the year. The stream entered the abandoned Pittsburgh Coal Company's Montour No. 2 underground mine complex and emerged several miles downstream as part of a large AMD discharge to Millers Run, known as the Gladden Discharge.

Beneficial impacts of the project in addition to the elimination of the hazardous AML features include: 1,100 linear feet of Fishing Run restored to its approximate pre-mining configuration using principles of fluvial geomorphology; the clean water inflow to the abandoned mine complex was eliminated; and at the Gladden Discharge flow rate and iron load were reduced by 35% and 30% respectively. The Gladden Discharge can now be passively treated in the space available thus allowing for significant future water quality improvement in Millers Run and the Chartiers Creek Watershed.

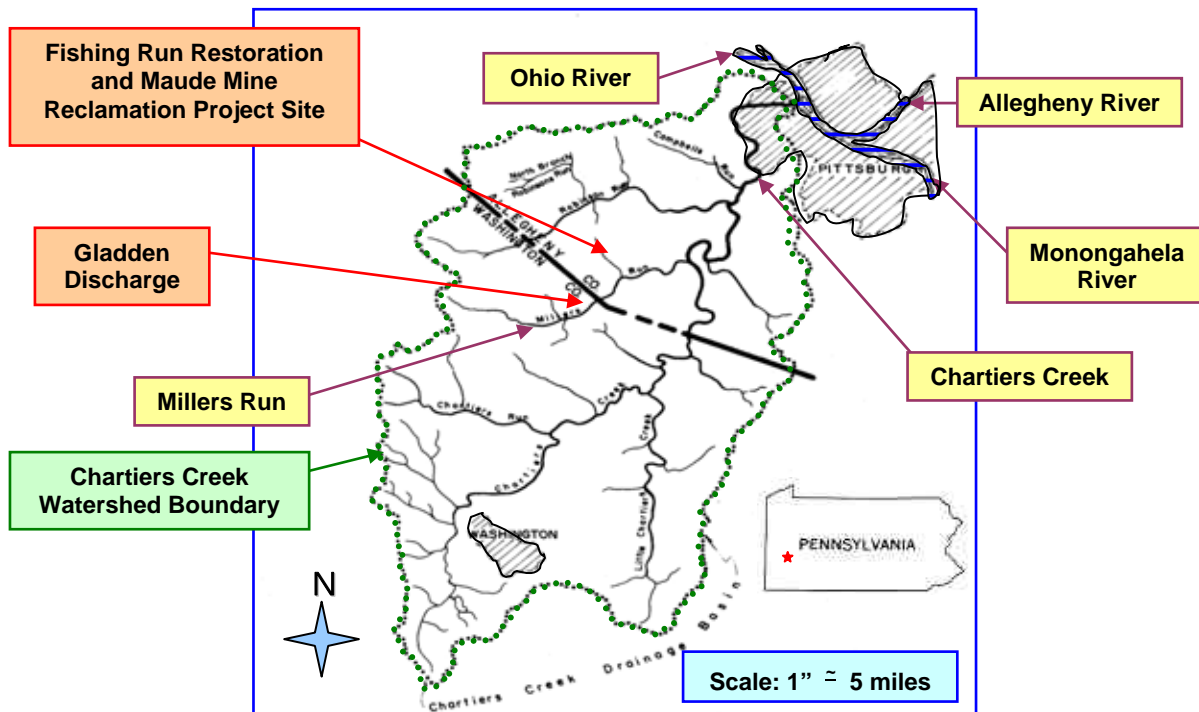


Figure 1 – Project Location Map

## **Project Background**

### **Project Location**

The project is located in South Fayette Township, Allegheny County, within the Fishing Run tributary of Chartiers Creek southwest of the City of Pittsburgh, Pennsylvania. Fishing Run has a drainage area of approximately 1,600 acres and constitutes a portion of the headwaters of Millers Run. It is located in the lower section of the Chartiers Creek Watershed. Chartiers Creek drains an area of approximately 280 square miles in Northern Washington and Allegheny Counties. Chartiers Creek enters the Ohio River three (3) miles west of the City of Pittsburgh.

### **Mining History**

The Pittsburgh Coal Seam is found near the surface throughout the basin and has been extensively mined. Large-scale underground mining operations began in the latter part of the 19<sup>th</sup> century as a result of the demand generated by the rapidly expanding Pittsburgh steel industry. Ease of access to the mineral, short transport distances via rail and river systems and increasing demand by the steel industry served to maximize coal production within this and adjacent portions of the Pittsburgh coal fields.

Some of today's largest mining companies can trace their origins back to this time and location. In 1899 the Pittsburgh Coal Company (PCC) was formed by the acquisition of numerous mining companies that were operating in and around the Chartiers Creek Watershed. The Montour Railroad, which served these operations, was also purchased by PCC. By 1922 PCC was producing 24,000,000 tons of coal per year from these operations. PCC would later merge with Andrew Mellon's Consolidation Coal Company (1945) forming the foundation of today's Consol Energy Corp.

By the end of World War II coal reserves within the Chartiers Creek basin were diminishing and large mines were subsequently abandoned. Smaller underground mines and surface mining operations continued to operate. The Charles E. Campbell Coal Company's Maude Mine was one of these smaller operations that mined adjacent to the abandoned PCC Montour No. 2 Mine. Campbell's abandoned mining operation, operated between 1949 and 1962, was the focus of this reclamation project.

### **Post-mining Site History**

Human impact upon the project site and contiguous area did not end with the abandonment of the Maude Mine. In 1962 the upper portion of the site, including a portion of the Fishing Run stream channel, was reconfigured to construct an airfield runway. Shortly afterward the airfield facility was relocated and the existing airstrip was converted to a drag racing facility known as the Pittsburgh International Dragway (PID). PID was a National Hot Rod Association sanctioned raceway and it operated until 1976. While in operation it attracted thousands of spectators to the site each weekend. The mine haulroad served as the access road to the facility, and the mine scale was used to weigh the dragsters. During the time it operated it was one of the largest facilities on the east coast, attracting a host of legendary drivers including Don Garlits, Shirley Muldowney and Bill Jenkins. In the past few years, new residential development has begun to encroach on the site.

### **Description of AML Problems**

The project site contained a number of Priority 2 abandoned mine land features, including an open mine portal, 1,500 feet of dangerous highwall, and several abandoned and deteriorated coal preparation plant and coal load-out structures. Figure 2 shows an overview of the Fishing Run project site and several of the hazardous AML features addressed by the project.

The open mine portal was receiving the flow from the upper portion of Fishing Run. Historically, culverts had been installed above the site to pipe Fishing Run through the old drag strip located upstream

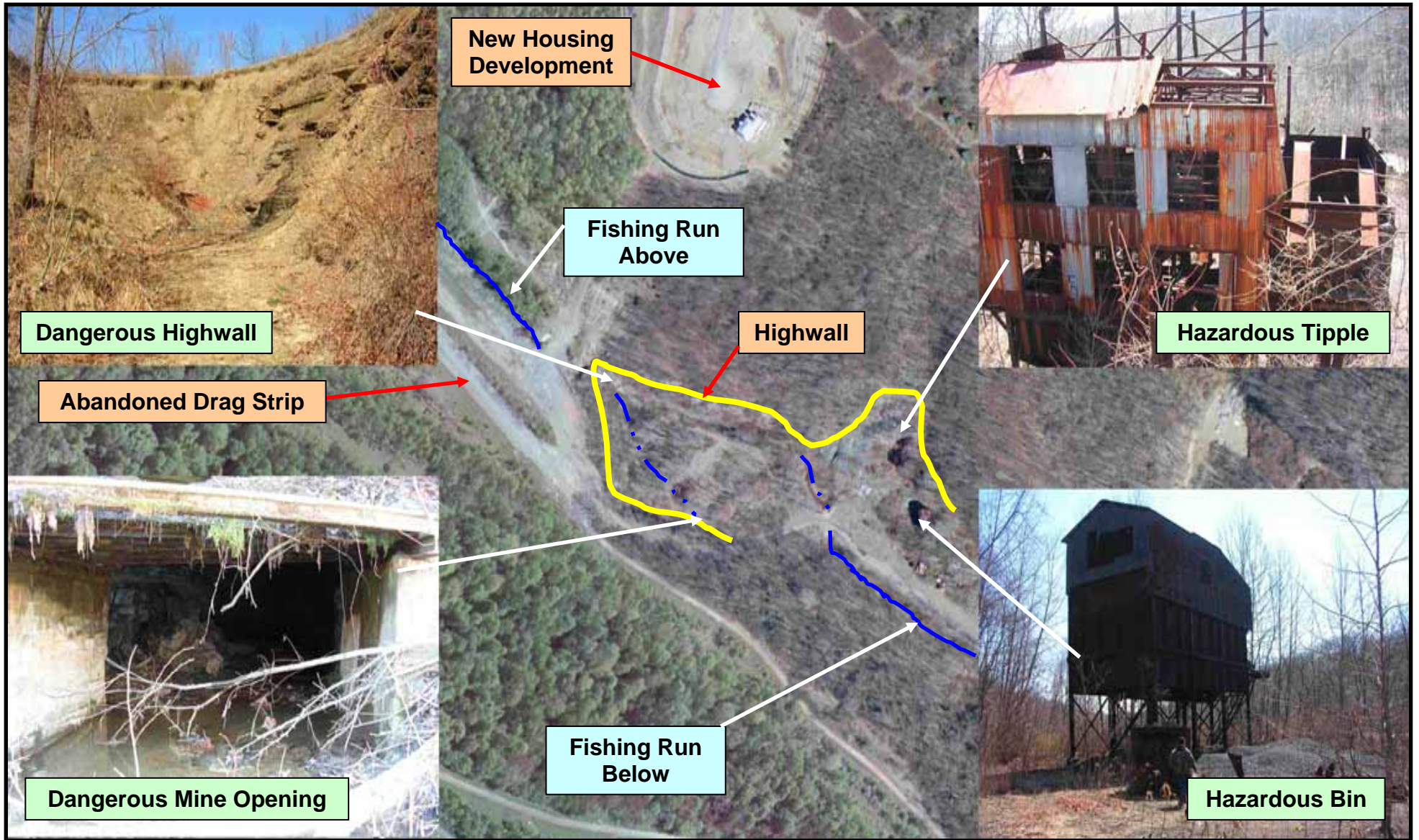


Figure 2 - General overview of Fishing Run project site showing various hazardous AML features addressed during the project.



of the site. Over the years the culvert outlet had become buried and blocked. Subsequently, the stream flow then broke out and flowed directly into the open mine portal. The water entered the abandoned underground mine complex, and subsequently emerged at Millers Run as part of a large abandoned mine discharge known locally as the Gladden Discharge. The Gladden Discharge is one of the most significant AMD discharges in the Chartiers Creek Watershed. It has the highest iron load and impacts approximately four (4) miles of Millers Run and an additional three and one-half (3.5) miles of the main stem of Chartiers Creek. Photographs of the Gladden Discharge and its impacts on Millers Run and Chartiers Creek are included on Figure 3.

### Reclamation Techniques

The project entailed a twofold reclamation approach: addressing significant health and safety concerns specific to the site, and addressing water quality aspects that had impacts that extended throughout the Chartiers Creek Watershed. Specific reclamation activities included: demolition, removal, and disposal of the abandoned coal preparation plant structures; elimination of the highwall areas through a combination of excavations and fills to achieve a maximum final slope of 2.5 horizontal to 1 vertical; sealing of both the open mine portal and a partially sealed mine opening; and restoration of the Fishing Run stream channel across the project site.

### Difficulty of Achieving Reclamation under Existing Conditions

#### Specific and Unique Considerations

Numerous permits and regulatory approvals were required for re-constructing Fishing Run stream channel. The design was completed and permit applications were submitted to the regulatory agencies in August 2006 for a Stream Encroachment permit and a National Pollutant Discharge Elimination System (NPDES) permit for discharge of stormwater from construction activities. The design was revised in November 2006 to incorporate regulatory comments. The permits were all approved in early 2007.

#### On-Site Difficulty of the Project

The abandoned highwall, open portal and abandoned coal preparation facilities were significant safety hazards to site visitors. Figure 4 shows photographs of the hazardous AML features located at the project site. An additional environmental restoration component was restoring Fishing Run and preventing the uncontaminated stream flow from entering the mine complex. This restoration effort has significantly improved Millers Run by reducing the flow rate of the Gladden Discharge and by retaining the uncontaminated stream flow on the surface where it provides for dilution in the receiving streams. Millers Run is a major tributary to Chartiers Creek, where a number of AMD abatement projects are currently being planned or implemented. This project will assist in the overall restoration of the Chartiers Creek Watershed. Specific elements of the project included:

- The dangerous highwall areas were eliminated through a combination of fills against the highwalls and excavation to lay the slopes back. All fill material was obtained from the project site or areas contiguous to the site.
- The open mine portal and the partially sealed mine opening were permanently sealed with concrete and gravel mine seals.
- A new stream channel corridor for Fishing Run was established using principles of stream geomorphology. Lower reaches of Fishing Run were evaluated and selected for use as reference reaches. Representative measurements and observations of pertinent stream channel parameters, including bed width and material composition, bank height, and ordinary high water levels, were used to develop the template for the re-created channel. The newly constructed channel tied into existing channels located above and below the site.



**Figure 3 – Gladden discharge and weir (upper left), Gladden Discharge entering Millers Run (upper right), Millers Run below the Gladden Discharge (lower left), and an aerial view of the confluence of Millers Run and Chartiers Creek showing iron plume (lower right).**





**Figure 4 – Hazardous tippel and bin structure (upper left), dangerous highwall (upper right), deteriorated steel column and graffiti on tippel structure (lower left), and entire flow of Fishing Run entering the open mine entry.**

- Seeps and springs were collected and conveyed via gravel envelopes, rock-lined ditches, and piping as appropriate. During construction, a discharge occurred from the partially sealed mine opening. Water quality monitoring indicated that it could be directed into the re-constructed Fishing Run stream channel. A piping system was subsequently designed, and installed.

Figure 5 shows various photographs of the project during construction and Figure 6 shows panoramic views of the project site at both the initiation and near the completion of construction.

#### *Project Start and Completion Dates and Construction Costs*

The project was initiated on November 17, 2005, with approval of a partnership agreement between the PA DEP BAMR and the SFCG. Construction began in early 2007 and was completed December 31, 2007. The final project cost was \$327,628 and was funded with OSM Title IV funds. The Allegheny County Conservation District awarded an additional grant of \$5,000 to the SFCG for the purpose of planting trees on the site.

#### *Name of the Organizations Responsible for the Reclamation*

The SFCG was the lead local entity for the project, and BAMR was the lead state agency. The project engineer was GAI Consultants, Inc. (GAI), and Kosky Contracting Inc. was the contractor for the project. Construction began in March 2007 and was completed in December 2007. Hedin Environmental completed a hydrologic study of the area following completion of the project construction.

#### *On-Site Effectiveness*

Construction began with structure demolition and earth disturbance activities in the upland areas. Grading in and around the identified water resource areas began in June 2007, after receipt of the stream encroachment permit. The contractor identified a primary borrow source at the lower end of the site which was used to obtain material for the initial highwall fills. Additional fill was obtained from within the project grading limits. The initial segment of the restored Fishing Run channel was constructed and the flow was diverted from the mine portal area to this channel. The mine portal was then sealed and subsequently buried as part of the highwall fill. Work to eliminate the highwalls and extend the new Fishing Run stream channel continued until project completion. Figure 7 shows several photographs of the re-constructed Fishing Run stream channel and the reclaimed site as well as the Fishing Run stream channel below the project site after the stream was re-directed away from the open mine entry.

#### *Effective/Innovative use of Technology*

The Fishing Run project included a partnership arrangement between the PA DEP and SFCG. The partnership agreement allowed the SFCG to pursue a design-build approach to restoring the site. The project design included natural stream design principles and effective use of PA DEP BAMR standard reclamation practices and techniques. During project construction, application of best management practices by the contractor allowed for the effective use of technology to achieve all of the goals of the project.

#### *Landscape Conforms to the Natural Environment*

The new Fishing Run stream channel corridor was established, using principles of stream geomorphology. The site grading plan accounted for the impacts that existed contiguous to the AML site. Previous landform modifications that resulted from the airstrip and racing facility were incorporated and considered in the design of the site.

#### *Elimination of Significant Health and Safety Problems*

The mine openings, the abandoned coal processing and coal load-out facilities, and the abandoned highwall were considerable health and safety concerns given their proximity to newly-





**Figure 5 – Initiation of project construction (upper left), construction of the first segment of the new Fishing Run stream channel (upper right), sealing of open mine entry (lower left), and backfilling of dangerous highwall with borrow material (lower right).**





Figure 6 – Site from lower end at initiation of construction (above) and near completion of construction (below).





**Figure 7 – Upstream segment of re-constructed stream channel (upper left), middle segment of channel showing willow plantings in riparian area (upper right), lower segment of channel showing re-contoured highwalls (lower left), and the Fishing Run stream channel below the site.**



developed and developing residential areas. In recent years, infrastructure improvements and development have occurred in the surrounding area and corresponding evidence of site visitation had also increased. It was recognized that the site hazards would become more acute as development continued to encroach. Further, with the passage of time, the abandoned structures would become an even greater hazard as their steel and concrete support structures continued to decay and weaken.

## **Funding**

### *Effective Use of Funds*

A total of \$327,628 of AML funds was expended for all aspects of the project: administration (\$4,828); design and construction management (\$98,800); and construction (\$224,000). The project resulted in the reclamation of 6.9 acres including the elimination of 1,500 L.F. of dangerous highwall, the demolition of five (5) coal preparation plant structures, and the sealing of two (2) mine entries. A 35% reduction of flow to the Gladden Discharge was achieved by establishing 1,100 feet of new stream channel for Fishing Run. This water, which prior to the project was contributing recharge to the Gladden Discharge, now is enhancing the quality of Fishing Run and helping to reduce the impact of the remaining AMD entering the receiving streams, Millers Run and Chartiers Creek. As a result, the Gladden Discharge can now be passively treated in the space available thus allowing for significant future water quality improvement in Millers Run and the Chartiers Creek Watershed.

### *Leveraging – Use of Partners for Funding or Technology*

The Fishing Run project included a number of partners bringing different abilities to the table to make the project a success. PA DEP BAMR provided the majority of the project funding in the form of a grant to the SFCG. SFCG hired highly-qualified contractors to complete the project design and project permitting, and to complete the hydrologic study following completion of the project. PA DEP BAMR provided project inspection and oversight. The property owner allowed all of the scrap iron and metal to be salvaged thereby reducing the project's final construction cost. Finally, SFCG acquired a \$5,000 grant from the Allegheny County Conservation District to purchase 4,000 trees that will be planted at the site. Volunteers will plant the trees the week of April 26, 2008, in celebration of Earth Day.

## **Benefits to the Community**

### *Community Support for the Project*

The project enjoyed significant community interest and support. The SFCG and CNC completed an evaluation of AML problems within the watershed in July 2003. The site was identified as one of their highest priorities for reclamation. Both groups maintain internet websites ([www.southfayetteconservation.org](http://www.southfayetteconservation.org) and [www.chartiersgreenway.net](http://www.chartiersgreenway.net)) that provide information and updates concerning this project and their continuing efforts to restore the Chartiers Creek Watershed. Local government officials strongly supported the project.

### *Long-Term Benefits to the Community*

Long-term benefits include the elimination of numerous documented Priority 2 AML features that were posing a risk to local residents. Other long-term benefits include increased property values, increased opportunities for economic development, enhanced educational and recreational opportunities and improved aesthetics. The SFCG has received many positive responses concerning the project which is helping to spur interest in additional AML reclamation and restoration work planned for the Chartiers Creek Watershed.

Additionally, Hedin Environmental completed a hydrologic study of the project and its impact on the Gladden Discharge. Results of the study indicate that the flow and iron loading from the discharge have been reduced by 35% and 30% respectively. The reduction will allow the discharge to be treated

passively which will in turn have a significant impact on the restoration of Millers Run and Chartiers Creek.

### **Surface Mining Control and Reclamation Act (SMCRA)**

#### *Exceeds the Spirit and Intent of SMCRA*

The Fishing Run reclamation project, OSM 02(4422)102.1, addressed a number of high-priority AML problems in accordance with the spirit and intent of Title IV of SMCRA. In recent years residential development has occurred in the surrounding area and corresponding evidence of site visitation has also increased. Additional benefits include the restoration of 1,100 lineal feet of Fishing Run to its approximate pre-mining configuration and the elimination of clean water inflow to the abandoned mine complex, thus reducing the pollutional impact of the Gladden Discharge. The Gladden Discharge can now be treated passively which will provide for significant progress in the restoration of the Chartiers Creek Watershed.

#### *Increased Public Awareness of SMCRA*

Prior to and during construction of the Fishing Run project, the site served as a field site for a number of OSM training courses and for tours for legislators and others interested in AML problems and the impacts of AML and AMD in the Appalachian Region. The site lies in close proximity to the Pittsburgh International Airport, OSM's Appalachian Regional Coordinating Center and the downtown City of Pittsburgh making it a convenient site for both training and field tours. It can now serve as a model of the great reclamation work that is accomplished throughout the country through the SMCRA Title IV AML Program.

In December 2006, Congress approved amendments to Title IV of SMCRA, extending the authority to collect AML fees through September 30, 2021. On January 3, 2007, United States Senator Arlen Specter, and United States Congressmen John Peterson and Tim Murphy used the Fishing Run AML project site as a backdrop to recognize the passage of this milestone legislation. The significant and varied abandoned mine hazards present at the site as well as the mine drainage problems made the Fishing Run project site an ideal backdrop for the announcement. Figure 8 shows a photograph of the Specter announcement and a photograph of all of the Fishing Run project partners.

#### *Transferability to other AML Projects*

The project exemplifies a comprehensive reclamation approach. Site specific AML hazards were targeted and addressed while taking into account methods which would provide both a positive impact upon the watershed and also help meet the goals of grassroots organizations, such as SFCG, in restoring their watershed. Clearly the partnership approach that was used here to develop a design-build strategy resulted in substantial savings in both time and overall cost. There are many similar sites in the coalfields where this approach can be duplicated.

### **Summary/Conclusion**

The Fishing Run project addressed a variety of AML problems posing both a threat to public health and safety and causing significant environmental degradation. Partnerships with local grassroots organizations and government agencies facilitated the completion of the project. The resultant reclamation provides an outstanding example of what can and is being accomplished through the AML Program here in Pennsylvania and throughout the country. Figure 9 shows two panoramic views of the Fishing Run Restoration and Maude Mine Reclamation Project upon completion of site grading work and upon completion of seeding and mulching of the regraded areas. The re-constructed Fishing Run stream channel can also be seen in both photographs.



**Figure 8 – U.S. Senator Arlen Specter, along with Congressmen John Peterson and Tim Murphy announce the reauthorization of Title IV of SMCRA at the Fishing Run project site during a January 3, 2007 press conference as BAMR Director Roderick Fletcher and DEP Deputy Secretary Scott Roberts look on (above), and “The Project Partners” - representatives of SFCG, CNC, PA-DEP, GAI Consulting, Hedin Environmental, and Kosky Contracting pose for a photo during the final inspection held at the completion of project construction in December 2007 (below).**





Figure 9 – Panoramic views of reclaimed Fishing Run project site showing re-contoured highwalls and re-constructed Fishing Run stream channel.