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A. PROJECT SUMMARY

The Blackleggs Creek Watershed Association (BCWA) was established on February 13, 1986 by a number of concerned citizens, private corporations, and government agency personnel. Originally, the group was organized by sportsmen and women in an attempt to get Blacklegs Creek on the Pennsylvania Fish and Boat Commission's (PFBC) approved trout waters list. This was a difficult task due to the Blacklegs watershed being severely degraded by abandoned mine drainage (AMD). The group's efforts led to the establishment of a PFBC cooperative trout nursery and the beginning of the Blacklegs Trout Nursery Club (see Appendix A). Eventually the PFBC designated a very small section of the stream as approved for trout stocking.

The small section of stocked trout water on Blacklegs Creek was a start to the overall goal of the group. That goal is to restore the entire Blacklegs Creek watershed, to the extent possible, to a condition that allows for the entire length of Blacklegs Creek to be stocked with trout by the PFBC. The association still maintains the Blacklegs Trout Nursery, but in recent years our efforts have shifted toward the remediation of several AMD's throughout the watershed.

Our organization is working to:

Improve water quality in the watershed's streams by finding innovative and cost-effective ways to manipulate abandoned mine drainage discharge sites; encourage re-mining and/or reclamation of abandoned strip mine sites; complete stream-side stabilization and/or stream-side fencing of affected stream segments; and encourage better use of erosion and sedimentation control practices by contractors and local communities.

Protect the recreational opportunities offered by the watershed by encouraging municipalities to utilize sound planning practices as the communities in the watershed begin to grow.

Reduce negative and improve positive socioeconomic impacts. With the reduction of negative impacts and increasing improvements to the resources, the environmental condition along with the socioeconomic condition of the watershed will continually improve.

These goals both support and complement other conservation and environmental needs of the region. Our organization has actively participated in numerous abandoned

mine drainage and water quality improvement activities held in the Appalachia Region for many years and is prepared to complete several AMD remediation projects in the watershed.

B. SCOPE OF WORK

The following sections describe the scope of work for the completion of Phase I of this proposed project. Engineering for the project will be provided by Skelly and Loy, Inc., our organization's environmental consultant.

1. Passive Treatment System Design

The Sporanza #2 Run AMD Project was developed to treat mine drainage impacted seeps draining to Blacklegs Creek. Several seepage locations have been identified and sampled. This design package was developed to treat the seep identified as Sporanza #2, which is believed to be an underground mine discharge. The general concept employed is to contact the seepage water with limestone material to add alkalinity to the water. The net alkaline water is then routed through pond/wetland cells for precipitation of metals. The passive treatment system includes the following components: a piping network to direct the discharge to the treatment location; one limestone filled basin; and pond/wetland cells. The system also includes an in-line water control structures to adjust wetland water elevations. An engineer's cost estimate has also been completed and is attached.

2. Limestone Pond Design

A limestone pond-based approach is proposed for the Sporanza #2 passive treatment system design. One limestone pond is proposed. This pond will accept the Sporanza #2 discharge, add alkalinity, and direct the net

alkaline water to the wetland cell. The design considered samples collected from the Sporanza #2 discharge. A summary of Sporanza #2 discharge water quality, flow rates, and design assumptions follows.

**TABLE 1
WATER QUALITY AND FLOW RATES
SPORANZA #2 DISCHARGE**

PARAMETERS	SPORANZA #2
Average flow rate	1250 gpm
Maximum design flow rate	1250 gpm
Average acidity	89 mg/L
Average iron	0.4 mg/l
Average aluminum	3.1 mg/L
Assumed alkalinity production rate	100 mg/L

Based on these assumptions, a conceptual design was prepared for a limestone pond for treatment of the Sporanza #2 discharge. All of the samples collected had iron concentrations of <1.0 mg/L. Because only minor amounts of iron have been detected in the discharge, there is a reduced threat of iron coating the limestone. Therefore, no compost is included in the design to lower oxygen levels in the water prior to contacting the limestone. There are no data available to accurately estimate the amount of alkalinity that will be generated by a limestone pond at this location, although the data for Anoxic Limestone Drains suggests the range of 150-350 mg/l. The expected alkalinity production rate for the limestone pond is expected to be at or somewhat below that range due to limited contact time with the limestone during average flow conditions. A limestone alkalinity production rate of 100 mg/L was assumed for this design.

Limestone quantity estimate

Tons alkalinity generated/year = 1250 gpm x 100 mg/L acidity x 0.0022 = 275 tons/year
 Limestone dissolved/year = 275 / 0.85 (% CaCO₃) = 324 tons per year

A 10-year estimate of limestone to be dissolved follows: (324 tons/year x 10 years) = 3,240 tons of limestone for the pond. It is recognized that the limestone pond may require replenishment prior to the end of the 10 year period based on an alkalinity production rate of 100 mg/L. The actual alkalinity production rate will be measured after construction, the success of the system will be determined, and a limestone replacement schedule will be developed. This addition of limestone will be a simple process of adding additional stone to the top of the bed. Limestone in the pond will be installed with a depth of approximately four feet.

3. Wetland Design

Wetlands generally work well for final polishing (metal removal) using filtration mechanisms. This wetland is assumed to be sized based on available space as opposed to specific design criteria. Approximately one acre of area is available for the wetland.

Water will enter the wetland from the limestone pond. An aeration drop of approximately one foot is proposed from the limestone pond to the wetland. The water level in the wetland cell is proposed to be controlled using an in-line control structure. The wetland cell water levels can be adjusted in response to buildup of sediment and/or metal accumulation.

**TABLE 2
PROJECT SCHEDULE**

TASK	TIME FRAME	RESPONSIBLE PARTY
Project organization meeting to coordinate all parties involved.	Winter 2000	BCWA, Skelly and Loy

Conceptual design completed and reviewed	Early Spring 2001	BCWA, Skelly and Loy, PADEP
Final design completed	Spring 2001	Skelly and Loy
Construction of facility begins	Late Spring 2001	Contractor
Construction of facility completed	Summer 2001	Contractor
Post-construction water quality monitoring begins	Summer 2001	EASI
Final report produced	Late Fall 2002	Skelly and Loy
Report is submitted to PADEP	Winter 2002	BCWA

C. PROJECT JUSTIFICATION

The Sporanza discharges, as well as the Big Run #9 discharge, are the largest contributors to the overall AMD problems of Blacklegs Creek. This project can be completed most effectively in a two phase process because current data is available for the Sporanza #2 discharge, but not for the Sporanza #3. Both discharges enter Big Run at the same location, but on opposite sides of the stream. An additional proposal for the assessment of both the Sporanza #3 and Big Run #9 discharges has been submitted through the Growing Greener program. This was done in an effort to obtain the information necessary to complete a second phase of this project (Sporanza #3), as well as a remediation project for the Big Run #9 discharge. The patience our organization is displaying in our remediation efforts illustrates our commitment to complete these much need projects in the proper manner. Through our ongoing water quality monitoring program we have been able to determine that the remediation of the Sporanza #2 and #3 discharges, as well as the Big Run #9 discharge, would equate to a tremendous water quality improvement to Big Run, and ultimately, Blacklegs Creek.

The Rochester and Pittsburgh (R&P) Coal Company has donated the land needed to complete this project. They have cooperated with our organization since its establishment and have graciously donated land and materials for our use in other projects (see Appendix B, C, D, and E). We feel that this working relationship is rare in western

Pennsylvania and that we can display to other watershed organizations the advantages of establishing these beneficial partnerships.

A few of the numerous projects and activities our group has sponsored are described below in Table 3.

**TABLE 3
PREVIOUS PROJECTS COMPLETED BY BCWA AND ITS PARTNERS**

PROJECT	PARTICIPANTS/SPONSORS
Construction of a cooperative trout nursery	BCWA, R&P Coal Company, Saltsburg Sportsmen Club, PFBC
Water sampling and analysis program	BCWA, Saltsburg Sportsmen Club, EASI
1974 Scarlift Study	PADER (now DEP)
Sponsorship of several stream clean-up and kids' fishing days	BCWA
Kolb discharge treatment facility	BCWA, WPCAMR, Indiana County Conservation District, NRCS
Handicapped fishing access	BCWA, PFBC

Additionally, BCWA has established a tremendous relationship with the Environmental Alliance for Senior Involvement (EASI). When it was determined that the watershed was in need of a comprehensive water sampling program, members of EASI graciously volunteered to assist us. The water sampling program developed by EASI, BCWA, PADEP, and the Indiana County Conservation District is very comprehensive and has led to our organization being fully prepared to explore implementation projects within the watershed. The sampling program includes collecting samples monthly, recording those samples into a database, and analyzing the information. Data analysis is done with the assistance of PADEP and the Indiana County Conservation District.

D. PARTNERSHIP AND COMMUNITY INVOLVEMENT

BCWA will maintain constant correspondence with Skelly and Loy throughout the project. Also assisting with the oversight process will be the Indiana Conservation District and Western Pennsylvania Coalition for Abandoned Mine Drainage (WPCAMR). Additionally, our organization has previously established a project technical committee to coordinate projects such as this.

Our organization would schedule a public meeting where information regarding our proposals through the Growing Greener program would be discussed. It is the hope of BCWA that we can obtain additional support for our efforts from the community. Because of the notoriety of the Blacklegs Trout Nursery, obtaining support will not be difficult. Our organization continuously strives to involve the public in our efforts. This is evidenced by the several community days and open house programs we have coordinated in the past (see Appendices F and G). Information regarding this project would be conveyed at our regularly scheduled events.

We feel that our organization and the Blacklegs Creek watershed could serve as a model for other watersheds groups with regard to AMD treatment in several different capacities. We have also partnered with several agencies, organizations, and even the R&P Coal Company in order to reach our ultimate goals. By funding these and future projects throughout the watershed and showing vast improvements in water quality, the benefits of the Growing Greener program can be demonstrated.

E. COST ESTIMATE

For use in the grant application, Skelly and Loy estimated the total project costs for the above work efforts. The cost estimates for each of these efforts are summarized below.

Design of Treatment Facility

Description of Tasks

1. Detailed analysis of water quality data
2. Conceptual design and permitting
3. Complete final design

*Total for design of treatment facility.....***\$25,000.00**

Construction of Treatment Facility

Description of Tasks

1. Clearing and grubbing (2 acres @ \$500/acre).....\$1,000.00
2. Diversions (500 ft. @ \$3.50/ft.).....\$1,750.00
3. Wetland (5,000 cy @ \$5/cy).....\$25,000.00
4. Limestone (3,240 tons @ \$17/ton).....\$55,080.00
5. 12" pipe (ADS N-12-150 -150 ft @ \$15/ft.).....\$2,250.00
6. Sporanza #2 - 12" pipe (Drisco 500 ft. @ \$10/ft.).....\$5,000.00
7. Fittings, etc.....\$200.00
8. Limestone pond excavation (2,500 cy @ \$5/cy).....\$12,500.00
9. Stream Crossing.....\$20,000.00
10. Access road materials.....\$5,000.00
11. In-line control structures (1 @ \$750/ea.).....\$750.00
12. Seeding (2 acres @ \$1,500/acre).....\$3,000.00
13. Pollution control (1000 ft. @ \$1.50/ft.).....\$1,500.00
14. Mobilization.....\$10,000.00
15. Contingency (20%).....\$28,606.00

*Total for construction of treatment facility.....***\$171,636.00**

Public Participation & Final Report

Description of Tasks

1. Facilitate monthly public meetings where progress will be updated
2. Coordinate a publicity effort through local media
3. Prepare brief final report detailing the effectiveness of the project

*Total for public participation and final report preparation.....***\$5,600.00**

MATCHING FUNDS/SERVICES PROVIDED

Construction of Treatment Facility

Description of Tasks

- 1. Rochester & Pittsburgh Coal Company (property donation).....\$10,000.00
- 2. Rochester & Pittsburgh Coal Company (materials donation).....\$5,000.00

*Total for construction of treatment facility.....***\$15,000.00**

Public Participation & Final Report

Description of Tasks

- 1. BCWA
 - 100 hrs. @ \$15.00/hr. for Project Manager.....\$1,500.00
 - 100 hrs. @ \$10.00/hr. for other members.....\$1,000.00
 - Unreimbursed project administration (2%).....\$4,045.00
- 2. Water sample laboratory analysis
 - 20 samples @ \$100/sample.....\$2,000.00

*Total for public participation and final report preparation.....***\$8,545.00**

*TOTAL PROJECT COSTS INCLUDING MATCH.....***\$225,781.00**

*TOTAL MATCH BEING PROVIDED.....***-\$23,545.00**

*TOTAL FUNDS REQUESTED BY PROPOSAL.....***\$202,236.00**