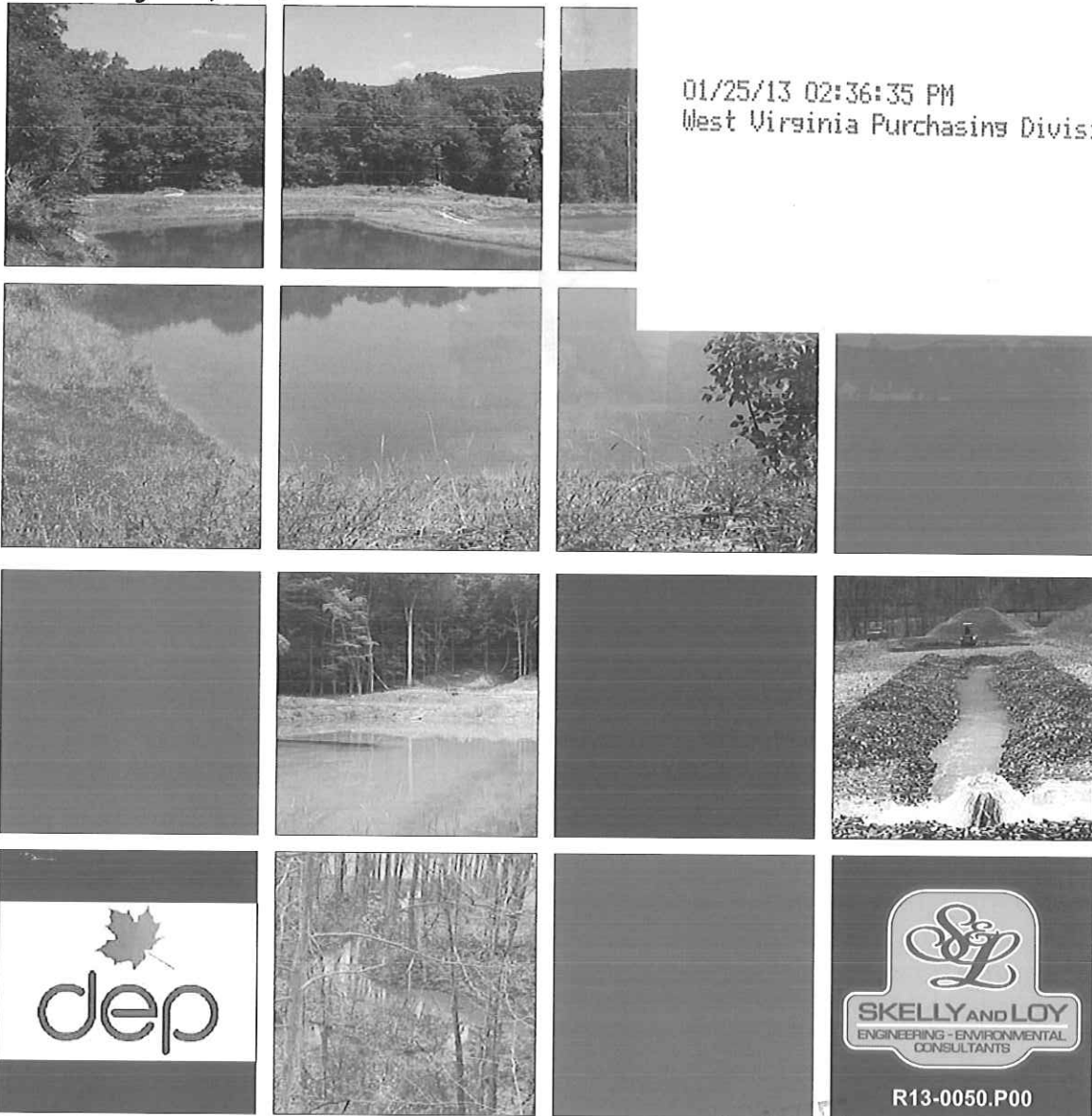


ORIGINAL

# Expression of Interest #DEP16030

## Professional Engineering Design Services and Construction Monitoring Services at the MacArthur Subsidence Phase 2 Project, Raleigh County, WV

January 23, 2013



01/25/13 02:36:35 PM  
West Virginia Purchasing Division

Prepared For  
West Virginia Department of Environmental Protection  
Department of Administration, Purchasing Division  
2019 Washington Street East  
P.O. Box 50130  
Charleston, WV 25305-0130

Prepared By  
Skelly and Loy, Inc.  
6615 West Main Street  
Wise, VA 24293

RECEIVED  
JAN 25 2013  
WEST VIRGINIA  
PURCHASING DIVISION  
NOTA

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**MISSION STATEMENT**

Skelly and Loy is determined to exceed total client expectation in the performance of quality engineering and environmental services.

**CORE VALUES**

To Produce Quality  
Work On-Time &  
Within Budget

To Keep Staff Members  
Gainfully Employed

To Earn A Reasonable  
Profit

**At Skelly and Loy, you will find extraordinary people. And you can expect extraordinary**

## WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

## AML CONSULTANT QUALIFICATION QUESTIONNAIRE

Attachment "B"

PROJECT NAME Construction Monitoring Services at the MacArthur Subsidence Phase 2 Project		DATE (DAY, MONTH, YEAR) 22, 1, 13	FEIN 25-1645583	
1. FIRM NAME Skelly and Loy, Inc.		2. HOME OFFICE BUSINESS ADDRESS 449 Eisenhower Boulevard, Suite 300, Harrisburg, PA 17111		3. FORMER FIRM NAME
4. HOME OFFICE TELEPHONE 717-232-0593	5. ESTABLISHED (YEAR) 1969	6. TYPE OWNERSHIP Individual    X Corporation Partnership    Joint-Venture		6a. WV REGISTERED DBE (Disadvantaged Business Enterprise) YES                                X NO

## 7. PRIMARY AML DESIGN OFFICE: ADDRESS/ TELEPHONE/ PERSON IN CHARGE/ NO. AML DESIGN PERSONNEL EACH OFFICE

ADDRESS	TELEPHONE	PERSON IN CHARGE	NO. PERSONNEL
6615 West Main Street Wise, VA 24293	276-328-3128 FAX 276-395-1310	Rex A. Pepller, P.E.	6

## 8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM

## 8a. NAME, TITLE, &amp; TELEPHONE NUMBER - OTHER PRINCIPALS

Sandra Loy Bell, Chief Executive Officer  
John W. Gunnett, PG, President & Chief Operating Officer  
Mark A. Williams, Executive Vice President, Engineering Services  
449 Eisenhower Boulevard, Suite 300  
Harrisburg, PA 17111  
717-232-0593

Robert E. McClure, Executive Vice President, Environmental Services  
19741-B Leitersburg Pike  
Hagerstown, MD 21742  
301-766-4236

9. PERSONNEL BY DISCIPLINE=> Numbers reflect participating Skelly and Loy, Inc. offices. Numbers in parentheses () reflect personnel in entire company.

0 ADMINISTRATIVE (18)	0 ECOLOGISTS (0)	0 LANDSCAPE ARCHITECTS (1)	0 STRUCTURAL ENGINEERS (1)
0 ARCHITECTS (0)	— ECONOMISTS (0)	0 MECHANICAL ENGINEERS (0)	1 <b>SURVEYORS (2)</b>
0 <b>BIOLOGIST (8)</b>	0 ELECTRICAL ENGINEERS (1)	2 <b>MINING ENGINEERS (5)</b>	0 TRAFFIC ENGINEERS (0)
1 <b>CADD OPERATORS (7)</b>	0 ENVIRONMENTALISTS (23)	— PHOTOGRAMMETRISTS	1 OTHER (47)
0 CHEMICAL ENGINEERS (0)	0 ESTIMATORS (1)	0 PLANNERS: URBAN/REGIONAL (3)	
0 <b>CIVIL ENGINEERS (6)</b>	0 <b>GEOLOGISTS (7)</b>	— SANITARY ENGINEERS (0)	
1 CONSTRUCTION INSPECTORS (2)	0 HISTORIANS (3)	0 SOILS ENGINEERS (1)	6 TOTAL PERSONNELL (130)
0 DESIGNERS (0)	0 HYDROLOGISTS (0)	0 SPECIFICATION WRITERS (1)	
— DRAFTSMEN			

TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE: 2

\*RPEs other than Civil and Mining must provide supporting documentation that qualifies them to supervise and perform this type of work.

10. HAS THIS JOINT-VENTURE WORKED TOGETHER BEFORE?  YES  NO





12. A. Is your firm experienced in Abandoned Mine Lands Remediation/Mine Reclamation Engineering?

X YES Description and Number of Projects: Skelly and Loy has broad and diverse experience in all aspects of mine closure projects. This experience has included dozens of recent projects as well as approximately 70 other projects dating back to the early 1970's associated with abandoned surface and underground mines, wet mine seal design, reclamation planning, grading plans, and development of bid documents. Our experience includes soup to nuts ability from evaluation, to design and bid specifications, and through construction inspection. Skelly and Loy is a recognized leader in mine planning and abandoned mine reclamation providing mining and civil engineering, environmental, and water resources including passive and active treatment of acid mine drainage to the mining industry, state agencies, and federal government.

Please refer to our list of projects including herein. Specifically our work for Virginia AML on the Pole Bridge Road project was focused on reclamation, subsidence, and AMD treatment for an abandoned mine site. Our permitting for Circle L Land Company on their Red Ash strip mine and Gob Pile Reclamation project involved two targeted areas > re-mining of an old strip pit and reclamation of several old gob piles on the same property. Permitting was obtained for the gob reclamations and the client has been working on this project. The re-mining strip permit is anticipated to be approved by January 31, 2013 and the client plans to begin work immediately.

NO

B. Is your firm experienced in Soil Analysis?

X YES Description and Number of Projects: Soil analysis is an integral part of many abandoned mine reclamation projects conducted by Skelly and Loy. These soil analyses typically include evaluation of soils for wetland determination to soil chemistry evaluation related to revegetation requirements. From this standpoint, soil analysis is a component of nearly every abandoned mine land project Skelly and Loy completes and every newly permitted surface mining site. Additionally, our engineers and technicians have experience at soil testing and evaluations for foundation and fill designs and for many typical construction projects

NO

C. Is your firm experienced in hydrology and hydraulics?

X YES Description and Number of Projects: Skelly and Loy has completed many hydraulic and hydrologic engineering service for the mining industry and governmental agencies. Skelly and Loy is well versed in computer applications and routinely uses computer software applicable to hydrologic and hydraulic engineering, including HEC-1, HEC-2, HEC RAS, HEC HMS, ARCINFO, as well as GIS, CADD, SedCAD, and Skelly and Loy's proprietary software.

NO

D. Does your firm produce its own Aerial Photography and Develop Contour Mapping?

YES Description and Number of Projects: \_

X NO Skelly and Loy does not have Aerial Photography capabilities, however; we have a working agreement with Tuck Mapping Solutions, Inc., to provide this service.

E. Is your firm experienced in domestic waterline design? (Include any experience your firm has in evaluation of aquifer degradation as a result of mining.)

X YES Description and Number of Projects: Skelly and Loy has completed many projects for Pennsylvania Department of Environmental protection that included evaluation of mining impacts to private wells, determined that the mining impacts were caused by pre-SMCRA mining activities based on evaluation of aerial photos, and completed the design of a water line extension to serve the impacted homes. Skelly and Loy uses AMDTreat and the Geochemical modeling program, Geochemist Workbench.

NO

F. Is your firm experienced in Acid Mine Drainage Evaluation and Abatement Design?

X YES Description and Number of Projects: Skelly and Loy is a national leader in the design of passive treatment systems for Acid Mine Drainage (AMD). Skelly and Loy staff have completed approximately 100 passive treatment system designs for mining companies, state agencies, and the federal government. Approximately 50 of these designs have gone through to construction in West Virginia, Pennsylvania, Maryland, and Tennessee. A typical project includes evaluation of the mining activity that created the AMD, AMD discharge chemistry and flows, available space to construct a system, projected life of system, projected water quality, and operation and maintenance plans such as the Virginia AML Pole Bridge Road project where drainage was expected and shown to be acid and Skelly and Loy provided an appropriate design feature to manage the discharge.

NO

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Peppler, Rex A.	2	18	1

Brief Explanation of Responsibilities

Mr. Peppler was hired by Skelly and Loy, Inc. in September 2011 to manage the firm's office in Wise, Virginia. He is responsible for the day-to-day operations of the office, staff management, project management, and business development. The Wise, Virginia, office offers engineering design, permitting, computer-aided drafting, surveying, and field inspection work services. The professional engineers and technicians at this location are highly skilled and provide exemplary client services to the coal, utilities, and transportation industries.

Mr. Peppler managed projects for clients such as Alpha Natural Resources and Circle L Land - including slope stabilities, drainage, ponds, impoundment inspections, road construction, civil/environmental work; administered coal supply, waste disposal, environmental supervision, and project management functions for American Electric Power; impeccable record with Virginia Dept. of Environmental Quality maintaining air, water, and waste permits for AEP; offered professional design, construction, and project management services as a civil engineer for industrial clients such as utilities, paper mills, contractors, and government entities since 1975. Supported sewer and water projects from commercial to residential in nature; supervised concrete, masonry, steel, and timber construction and inspection services for commercial, industrial, and residential projects in the region.

EDUCATION (Degree, Year, Specialization)

B.S., Civil Engineering, 1975, West Virginia Institute of Technology, Montgomery, West Virginia  
 M.S., Engineering Management, 1991, University of Tennessee, Kingsport, Tennessee

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

REGISTRATION (Type, Year, State)  
 Professional Engineer, 1993, VA  
 Professional Engineer, 1975, TN  
 Professional Engineer, 1976, WV  
 Professional Engineer, 2012, KY

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Schmidt, Terry, W.	17	22	

**Brief Explanation of Responsibilities**

A leading authority on mine reclamation practices including the treatment of acid mine drainage (AMD), Mr. Schmidt has served as Engineer-In-Charge of many assessment and mitigation projects. Mr. Schmidt's responsibilities have included directing the development and implementation of comprehensive field investigations, managing the data evaluation process, determining Best Available Technologies (BAT), developing engineering design packages, obtaining necessary permits, supervising construction inspection activities, and overseeing long-term monitoring and system operation and maintenance requirements.

As a result of his extensive experience, Mr. Schmidt has developed a unique understanding of the interrelationships between active and abandoned mine complexes, water quality, particularly pH and elevated metal concentrations, local geology and hydrogeology, and flow rates and their impact on the selection of the most appropriate abandoned mine reclamation practices. In addition to his project responsibilities, Mr. Schmidt is a well-published author on AMD issues. He has presented his technical papers at professional conferences held throughout the United States.

**EDUCATION (Degree, Year, Specialization)**

M.S. Mining Engineering, 1984, The Pennsylvania State University  
B.S. Mining Engineering, 1985, The Pennsylvania State University

**MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

The Society of Mining Engineers of America - Institute of Mining Engineers  
The American Society for Surface Mining and Reclamation  
American Institute of Mining Engineers  
Penn Anthracite American Institute of Mining Engineers  
Acid Drainage Technology Initiative (ADTI)

**REGISTRATION (Type, Year, State)**

Professional Engineer, 1994, PA  
Professional Engineer, 1997, NC  
Professional Engineer, 1995, TN  
Professional Engineer, 1996, VA  
Professional Engineer, 1997, MD  
Professional Engineer, 1997, OH

**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN (Furnish complete data but keep to essentials)**

**NAME & TITLE (Last, First, Middle Int.)**

Golkosky, Robert E.

**YEARS OF EXPERIENCE**

**YEARS OF AML DESIGN EXPERIENCE:**

10

**YEARS OF AML RELATED DESIGN EXPERIENCE:**

43

**YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:**

0

**Brief Explanation of Responsibilities**

Mr. Golkosky is a registered professional engineer with extensive experience in the coal mining industry. He has worked in senior management, operations, engineering, project management, acquisitions and consulting for several major mining and consulting companies. He has provided technical support and expert testimony in several litigation cases.

Mr. Golkosky's areas of specialization include international projects, project management/planning, economic evaluations, due diligence, mining engineering, and litigation support services.

Mr. Golkosky managed a major coal acquisition for a prominent company in the industry; planning for coal processing and handling, load out, slurry impoundment, and mines for another major producer; performed due diligence, life-of-mine, and reserve studies; served in a senior leadership position at several companies; and performed significant mine permitting in the region.

**EDUCATION (Degree, Year, Specialization)**

B.S., Mining Engineering, 1966, The Pennsylvania State University  
SOHIO Program for Middle Managers, 1984, University of New Hampshire

## MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

## REGISTRATION (Type, Year, State)

Professional Engineer, 1975, WV  
 Professional Engineer, 2002, VA  
 Professional Engineer, 2002, KY  
 Professional Engineer, 2002, PA  
 Professional Engineer, 2007, IN

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML PROJECT DESIGN** (Furnish complete data but keep to essentials)

## NAME &amp; TITLE (Last, First, Middle Int.)

Shultz, Bradley, R.

## YEARS OF EXPERIENCE

## YEARS OF AML DESIGN EXPERIENCE:

9

## YEARS OF AML RELATED DESIGN EXPERIENCE:

9

## YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

0

## Brief Explanation of Responsibilities

Mr. Shultz joined Skelly and Loy with a strong foundation of water chemistry and water/wastewater treatment experience having worked for over eight years in the environmental consulting and laboratory industries. As a result, he is adept at assessing mine drainage problems utilizing a watershed approach and relating to the chemistry for treating AMD discharges. During his investigations of various water quality related issues and associated remediation efforts, he has performed water sample collection and analysis, evaluated flow rates, evaluated aeration system and chemical treatment efficiency for hydrogen sulfide odor abatement, tracer studies for water quality and hydraulic evaluations, set-up and maintained databases, performed water quality modeling efforts, and analyzed the results to determine applicable treatment technologies. In addition, he has maintained and monitored the performance of water quality enhancement and treatment systems to ensure compliance with permit requirements as well as optimizing treatment effectiveness.

## EDUCATION (Degree, Year, Specialization)

B.S., Biology with option on Marine/Aquatic, 1993, Millersville University  
 M.E.P.C., Environmental Pollution Control, 2002, The Pennsylvania State University

## MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

## REGISTRATION (Type, Year, State)

Engineer In Training, 2011, PA

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML PROJECT DESIGN** (Furnish complete data but keep to essentials)

## NAME &amp; TITLE (Last, First, Middle Int.)

Sturgill, Jr., R.H. (Holland)

## YEARS OF EXPERIENCE

## YEARS OF AML DESIGN EXPERIENCE:

12

## YEARS OF AML RELATED DESIGN EXPERIENCE:

20

## YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

2



**Brief Explanation of Responsibilities**

As an Engineering Technician, Mr. Sturgill prepares maps, plans, cross sections, and other types of drawings; and drainage, excavation, site plans; and computes earthwork cut and fill volumes; designs drainage structures, valley fills, and roads; assists in preparing permit applications, reserve studies, and other technical reports; and performs GPS, RTK, and conventional field surveys. For more than 27 years, he has been providing various professional services to the mining, oil, and gas industries. As the past owner of a full-service construction company, Mr. Sturgill is also accomplished in construction planning, design, and cost estimation. He has served in various capacities to industries in the region for over 27 years; extensive experience in VA permitting, erosion & sediment control, surveying and mapping, earthwork, and technical reporting. Operated commercial and residential construction and property management business for many years and well versed in construction techniques and cost estimation for projects. Designed site drainage features, septic systems, concrete building slabs and foundations, and masonry work including construction inspection of same for commercial and residential clients throughout the region.

**EDUCATION (Degree, Year, Specialization)**

A.A.S., Drafting and Design, 1985, Mountain Empire Community College

**MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

**REGISTRATION (Type, Year, State)**

**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN (Furnish complete data but keep to essentials)**

**NAME & TITLE (Last, First, Middle Int.)**

**YEARS OF EXPERIENCE**

Balthis, Roy, K.

YEARS OF AML DESIGN EXPERIENCE:  
0

YEARS OF AML RELATED DESIGN  
EXPERIENCE:  
30

YEARS OF DOMESTIC  
WATERLINE DESIGN  
EXPERIENCE:  
4

**Brief Explanation of Responsibilities**

Roy Balthis is a Land Surveyor providing support service to the Wise, Virginia office of Skelly and Loy, Inc. In this role, Mr. Balthis' responsibilities include providing field services with complete responsibility to lead survey parties performing boundary surveys, mapping, and gathering data and information to establish plans, cross sections, drainage plans and other engineering and technical documents. His work may also involve measuring volumes for earthwork; stockpile measurements; verifying drainage and structural features; layout and verification of roads, ditches, culverts, and other technical aspects of plans and permits as required by clients of the firm.

Mr. Balthis has over forty years of responsible experience in the field of surveying. He has performed work for various entities throughout Southwest Virginia and Eastern Kentucky to the complete satisfaction of municipal, federal, and private clients in the region. He is a respected surveyor who understands all aspects of modern surveying and mapping technology.

**EDUCATION (Degree, Year, Specialization)**

**MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

**REGISTRATION (Type, Year, State)**

Registered Land Surveyor, Virginia and Kentucky

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
White, Darryl, L.			

Brief Explanation of Responsibilities  
 Mr. White has four years of experience developing maps and mine plans operations in WV and VA; performed volumetric calculations, grading and drainage designs, coal reserve studies, and pond inspections for certification for various clients in SW Virginia; Assisted with bridge designs and other civil features for clients.

EDUCATION (Degree, Year, Specialization)  
 A.A.S., Computer-Aided Drafting & Design 2011

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

Brief Explanation of Responsibilities

EDUCATION (Degree, Year, Specialization)

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)



14. PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE AML DESIGN SERVICES

Software: AMDTreat, Geochemist Workbench, CADD, SedCAD,

Survey Equipment:

TOPCON Total Station Model GPT-3200NW with non-prism technology, 1 ea.  
GR5 GPS receivers with Real Time Kinematics (RTK) technology, 4 ea.  
Prism poles, 2 ea.  
Allegro CX Survey Data Collector  
Battery Chargers, Trickle Charger  
Sokkia Level with Philly and CST level rods  
Level/Transit/Tripod/Rod  
Measuring Tape, Field, 300'  
Metal Detector  
Motorola Radios  
Philly Stadia Rod  
Schoenstedt or LST models Metal Detector (Stick)  
Sokkia Level  
Survey Rods - 2 each  
GPS Data Logger, Static with Tripod, Antenna, and Cables  
Trimble R-6 RTK System  
GPS, Hand-Held  
GST Stadia Rod  
Level, Dumpy, and Rod (for surveying elevations)  
Level, Laser, Invisible Beam with Tripod, Detector, and Rod  
Lietz Transit (CSI) Model 110  
Lietz Transit BT-20  
Measuring Rod  
Sokkia Auto Level C32  
Sokkisha Electronic Distance Meter - Red Mini 2 D7017  
Sokkisha Theodolite DT-6  
Trimble GeoExplorer 6000 XH  
Trimble Pro XR Receiver with a Trimble TSCE Datalogger  
Tools, Hand (shovels, picks, sledge hammer, post hole digger, rakes, etc.)  
Topcon GTS-211D Total Station (EDM)  
Tripods - 10 each  
Backpack for surveying equipment, 1 ea.  
Level/stadia rod, adjustable to 25 ft., 1 ea.  
Hand held rechargeable radios, 3 ea.  
Tape measure, 300 ft., 1 ea.  
Tape measure, 100 ft., 1 ea.  
Digital Camera, 1 ea.

15. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS THE DESIGNATED ENGINEER OF RECORD

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	NATURE OF YOUR FIRM'S RESPONSIBILITY	ESTIMATED CONSTRUCTION COST	PERCENT COMPLETE
Red Ash Strip; Application for permit representing lessee to Re-mine Jewell Coal Seam; Buchanan County, VA	Circle L Land Company, Inc. P.O. Box 1244 Raven, VA 24639	Engineering design as well as permitting research and package coordination, composition, and submission to secure a strip mining permit	\$160,000 (fees)	99%
Sugar Cove Gob; Permitting and engineering support for Coal Gob reclamation; Buchanan County, VA	Circle L Land Company, Inc. P.O. Box 1244 Raven, VA 24639	Engineering design and project management support for the client in such activities as obtaining reclamation permit and associated permits with MSHA and VA DEQ (air permit for screening. We have provided additional engineering associated with detailed quality studies and drainage details in order for client to continue operations	\$65,000 (fees)	98%
Middle Creek Gob; Application for permit representing Lessee for Coal Gob reclamation; Buchanan County, VA	Circle L Land Company, Inc. P.O. Box 1244 Raven, VA 24639	Engineering design as well as permitting research and package coordination, composition, and submission to secure a gob reclamation permit	\$120,000 (fees)	90%

Pole Bridge Road; Wise County, VA Project to eliminate certain hazards associated with abandoned mine site including dangerous highwall, dangerous impoundment, subsidence issues, acid mine drainage, and site drainage	Commonwealth of Virginia AML, P.O. Box 900 Big Stone Gap, VA 24219	Engineering design and project management to the client for site surveying, exploratory drilling, and remediation of problem areas	\$50,000 (fees)	75%
Seng Camp Fork #1; Application for permit representing Lessee to strip mine four coal seams on property; Buchanan County, VA	Revelation Energy, 160 Lark Branch, Suite 2, Pikeville, KY 41501	Engineering design as well as permitting research and package coordination, composition, and submission to secure a strip mining permit	\$160,000 (fees)	75%
Road Fork #6 Surface Mine; Renewal of permit representing Mid Vol Coal Company; McDowell County, WV	Mid Vol Coal Sales, Inc., 640 Clover Dew Dairy Road, Princeton, WV 24740.	Engineering and AutoCAD services for client to renew subject permit	\$5,000 (fees)	0%
Sequatchie Valley Coal Corporation, Comprehensive Engineering, Environmental and Permitting Services, Sequatchie County, TN	Sequatchie Valley Coal Corporation HCR 65, Box 364 Dunlap, TN 37327	Comprehensive Engineering, Environmental, and Permitting Services	\$2,000,000 (fee)	80%
Rausch Creek Land, L.P., Schuylkill County, PA	Rausch Creek Land, L.P. 978 Gap Street Valley View, PA 17983	Surface Mine Reclamation and Ash Management Services	\$1,000,000 (fee)	90%
Mine Ventilation Mapping and Control Stakeout, Old Castle Industrial Minerals, Thomasville, PA	Oldcastle Industrial Minerals 550 S. Biesecker Road Thomasville, PA 17364 Mr. Doyle Hurst (717) 792-2631	Mine Ventilation Mapping and Control Stakeout	\$25,000 (annually)	NA

Landree Mine Project, IN	LILY Group, Inc. 130 North Court Street Sullivan, IN 47882	Due Diligence, Mine Valuation	\$40,000	95%
Progress Energy Government Imposition Claim, IN	Progress Energy 410 S. Wilimington Street Raleigh, NC 27601	Mine Plans and Operating Audits	\$47,000	80%
Mine Ventilation Mapping and Control Stakeout Old Castle Industrial Minerals Thomasville, PA	Oldcastle Industrial Minerals Mr. Doyle Hurst 550 S. Biesecker Road Thomasville, PA 17364	Mine Ventilation Mapping and Control Stakeout	\$25,000 (annually)	NA
Statewide Open-End Contract for Natural Resources, WV (2009)	WV Division of Highways State Capitol Complex 1900 Kanawha Blvd., East Building 5, Room A-416 Charleston, WV 25305- 0430	Natural Resources	\$1,500,000 (fee)	36%
Statewide Open-End Contract for Natural Resources, WV (2011)	WV Division of Highways State Capitol Complex 1900 Kanawha Blvd., East Building 5, Room A-416 Charleston, WV 25305- 0430	Natural Resources	\$1,500,000 (fee)	6%

Philadelphia Water Department Stream Channel Restoration and Wetland Design Services	Philadelphia Water Department Aramark Tower 1101 Market Street 2 <sup>nd</sup> Floor Philadelphia, PA 19107	Natural Stream Channel Restoration and Wetland Design	\$2,000,000	33%
Central Susquehanna Valley Thruway Environmental Impact Statement, Snyder, Union & Northumberland Counties, PA	PENNDOT Engineering District 3-0 P.O. Box 218 Montoursville, PA 17754	Environmental Impact Study	\$19,700,000 (fee)	96%
Statewide Open-End Contract Cultural Resources Studies/Services, WV (2011)	WV Division of Highways State Capitol Complex 1900 Kanawha Blvd., East Building 5, Room A-416 Charleston, WV 25305-0430	Cultural Resources Studies/Services	\$750,000	90%
Statewide Open-End Contract for Compliance with Highway Traffic Noise Requirements, WV (2011)	WV Division of Highways State Capitol Complex 1900 Kanawha Blvd., East Building 5, Room A-416 Charleston, WV 25305-0430	Noise Analysis	\$1,500,000 (fee)	5%
NHS Corridor Between I-68 and Corridor H Tier One Draft EIS, WV	WV Division of Highways State Capitol Complex 1900 Kanawha Blvd., East Building 5, Room A-416 Charleston, WV 25305-0430	Environmental Impact Statement	\$1,355,000 (fee)	96%

Statewide Open-End Contract for Management of Environmental and Engineering Activities, PA (Agreement E02192)	PENNDOT Bureau of Design P.O. Box 3161 Harrisburg, PA 17105-3161	Environmental and Engineering Activities	\$3,000,000 (fee)	8%
PA Turnpike Commission Open-End Contract Storage Tank Program Services Systemwide, PA (Agreement 3208)	PA Turnpike Commission P.O. Box 67676 Harrisburg, PA 17106-7676	Storage Tank Management Program	\$2,000,000 (fee)	75%
PENNDOT District 4-0 Cultural Resources Open End, PA	PENNDOT District 4-0 55 Keystone Industrial Park Dunmore, PA 18512	Cultural Resources	\$1,000,000 (fee)	85%
SPC On-Call Consultancy Services Agreement	Southwestern Pennsylvania Corporation Regional Enterprise Tower 425 Sixth Avenue, Suite 2500 Pittsburgh, PA 15219-1852	Environmental Consulting	\$100,000 (fee)	75%
PENNDOT Environmental Remediation Services (Statewide), PA (Agreement 4400008267)	PENNDOT Bureau of Office Services P.O. Box 3060 Harrisburg, PA 17105	Remediation Services	\$4,950,000	81%
Statewide Open-End Contract for Environmental Training - Natural Resources, PA (Agreement 4400003172)	PENNDOT Bureau of Design P.O. Box 3161 Harrisburg, PA 17105-3161	Environmental Training	\$110,000 (fee)	23%
MD SHA 2011 Cultural Resource Open-End, MD (Agreement BCS2010-02B)	MD State Highway Administration 707 N. Culvert Street Baltimore, MD 21202	Cultural Resources	\$2,000,000 (fee)	40%

Bureau of Public Transportation Environmental Support Open-End Contract (Agreement E02468)	PENNDOT Bureau of Public Transportation P.O. Box 3161 Harrisburg, PA 17105- 3161	Environmental Consulting	\$2,000,000 (fee)	0%
TOTAL NUMBER OF PROJECTS: 27			TOTAL ESTIMATED CONSTRUCTION COSTS: \$47,262,000 (Estimated fees)	

16. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS SERVING AS A SUB-CONSULTANT TO OTHERS

PROJECT NAME, TYPE AND LOCATION	NATURE OF FIRMS RESPONSIBILITY	NAME AND ADDRESS OF OWNER	ESTIMATED COMPLETION DATE	ESTIMATED CONSTRUCTION COST	
				ENTIRE PROJECT	YOUR FIRMS RESPONSIBILITY
U.S. Route 35 Improvements, Mason and Kanawha Counties, WV	Cultural Resource Studies	WV Division of Highways State Capitol Complex 1900 Kanawha Blvd., East Building 5, Room A-416 Charleston, WV 25305-0430	2013	NA	\$3,400,000 (fee)
Greene County Bridge No. 99, Greene County, PA	Environmental Studies/ Documentation	Greene County Board of Commissioners 93 E. High Street Waynesburg, PA 15370	2013	NA	\$57,000 (fee)
S.R. 0422 Improvement Project, Armstrong and Indiana Counties, PA	Environmental Studies	PENNDOT District 10-0 2550 Oakland Avenue P.O. Box 429 Indiana, PA 15701	2013	NA	\$126,000 (fee)
S.R. 1001, Section C01, Farrandsville Road Reconstruction / Realignment, Clinton County, PA	Wetland Mitigation	PENNDOT District 2-0 1924 Daisy St. Extension Clearfield, PA 16830	2013	NA	\$51,000 (fee)
S.R. 0127, Sec. B01, Hunters Station Bridge Rehabilitation, Forest County, PA	Environmental Studies/Documentation	PENNDOT District 1-0 255 Elm Street P.O. Box 398 Oil City, PA 16301	2013	NA	\$307,000 (fee)
Freedom Road Improvement Project, Allegheny and Beaver Counties, PA	NEPA Document, Cultural Resources, Wetland and Stream Mitigation	PENNDOT District 11-0 45 Thoms Run Road Bridgeville, PA 15017-2853	2013	NA	\$550,000 (fee)
S.R. 0019, Section P02, Morrisville Widening and Relocation Project, Greene County, PA	Environmental Studies, Cultural Resources, NEPA Document, Permitting	PENNDOT District 12-0 P.O. Box 459 825 North Gallatin Avenue Ext., Uniontown, PA 15401	2013	NA	\$260,000 (fee)



16. PRESENT ACTIVITIES ON WHICH YOU ARE ASSOCIATED WITH OTHERS

PROJECT NAME, TYPE AND LOCATION	NATURE OF FIRMS RESPONSIBILITY	NAME AND ADDRESS OF OWNER	ESTIMATED COMPLETION DATE	ESTIMATED CONTRACT VALUE	
				ENTIRE PROJECT	YOUR FIRMS RESPONSIBILITY
S.R. 0021, Section H10, Roadway Improvement, Fayette County, PA	Environmental Studies and NEPA Document, Natural Resources Mitigation	PENNDOT District 12-0 P.O. Box 459 825 North Gallatin Avenue Ext., Uniontown, PA 15401	2014	NA	\$277,000 (fee)
S.R. 0119, Section 499, Wake Robin Curve, Indiana County, PA	Environmental Studies/Documentation	PENNDOT District 10-0 2550 Oakland Avenue P.O. Box 429 Indiana, PA 15701	2017	NA	\$60,000 (fee)
I-70 South Junction to PA 519, Washington County, PA	Environmental Studies	PENNDOT District 12-0 P.O. Box 459 825 North Gallatin Avenue Ext., Uniontown, PA 15401	2013	NA	\$85,000 (fee)
Greene County Bridge No. 15, Greene County, PA	Environmental Studies/Documentation	Greene County Board of Commissioners 93 E. High Street Waynesburg, PA 15370	2013	NA	\$58,855 (fee)

17. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM WAS THE DESIGNATED ENGINEER OF RECORD				
PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	YEAR	CONSTRUCTED (YES OR NO)
Leslie Branch Haulroad Renewal of Permit, McDowell County, WV	Mid Vol Coal Sales, Inc. 640 Clover Dew Dairy Road Princeton, WV 24740.	\$5000 (fees)	2012	Y
Environmental Site Assessment; Complete assessment of site environmental history and liabilities to satisfy transfer of ownership per contractual obligation of operating company; Hawkins County near Rogersville, TN.	Tennessee Valley Authority 1101 Market Street Chattanooga, TN 37402	\$10,000 (fees)	2012	Y
Dry Fork Surface Mine; Strip mining permit revision representing client in Wise County, VA	Paramont Coal Company LLC 5703 Crutchfield Drive Norton VA 24273	\$40,000 (fees)	2012	Y
Osaka Wilson Mitigation Project; Temporal stream loss mitigation project management and coordination with various agencies to secure approval associated with Osaka Wilson mine; in Wise County, VA.	Maggard Branch Coal LLC P.O. Box 2560 Wise, VA 24293	\$65,000 (fees)	2012	Y
I81 Exit 10 Development; Provided civil engineering and surveying services including erosion and sediment control for site permitting; Washington County, VA	Barnette Contractors LLC P.O. Box 1190 Wise, VA 24293	\$2,100 (fees)	2012	Y
Rock Switch Road; Provided civil engineering and permitting services for site permitting; Wise County, VA.	Barnette Contractors LLC P.O. Box 1190 Wise, VA 24293	\$6,000 (fees)	2012	N (planned for 2013)
Valley Point #12 Abandoned Mine Drainage Remediation Project, Preston County, WV	Friends of Deckers Creek P.O. Box 877 Dellslow, WV 26531	\$37,000	2008	Y

Six Mile Run, Sandy Run and Longs Run AMD Assessment and Remediation Plan, Bedford County, PA	Broad Top Township P.O. Box 57 Defiance, PA 16633	\$1,750,000	2009	Y
Blackleggs Creek Watershed Acid Mine Drainage Remediation Projects, Indiana County, PA	Blackleggs Creek Watershed Association P.O. Box 59 Clarksburg, PA 15725	\$2,000,000	2009	Y
Block Model and Detailed Mine Plan	Confidential Client	\$139,000	2008	NA
Charger Underground Mine Due Diligence Investigations, Petersburg, IN	Solar Sources, Inc. 1592 North State Road 61 P.O. Box 567 Petersburg, IN 47567	\$54,000	2008	NA
Cumberland Resource Corporation - Roda Dust Monitoring and Abatement, Roda, VA	Cumberland Resource Corporation P.O. Box 2560 Wise, VA 24293	\$125,000	2010	NA
PPL ROW Mineral Valuation, PA	Progress Energy 410 S. Wilimington Street Raleigh, NC 27601	\$8,000	2012	NA
Due Diligence Investigations at Blaschak Coal Corporation Columbia, Northumberland, and Schuylkill Counties, PA	Milestone Partners 595 East Lancaster Avenue, Suite 303 St. Davids, PA 19087	\$246,000	2009	NA
Martins Creek Reserve Due Diligence, PA	Delaware Quarries, Inc. 6603 Route 202 New Hope, PA 18938	\$10,000	2008	NA
Investigations of Solar Mine Costs, IN	Hoosier Energy REC, Inc. 7398 North State Road 37 Bloomington, IN 47304	\$9,000	2011	NA
Prairie State Due Diligence Addendum, IL	R.W. Beck 1801 California Street, Suite 2800 Denver, CO 80202	\$50,000	2008	NA
Fatal Flaw Investigations, MT	AES Corporation 130 E. Seneca Street, Suite 505 Ithaca, NY 14850	\$50,000	2008	NA

Baron Reserve Economic Re-evaluation, IN	MGMT Energy, Inc. 3203 Third Avenue N, Suite 300 Billings, MT 59101	\$20,000	2009	NA
IPL/Prosperity Mine Force Majeure, IN	Indianapolis Power and Light Company 1 Monument Circle Indianapolis, IN 46204	\$37,000	2009	NA
Regulatory Compliance Study, OH	Dayton Power and Light 1065 Woodman Drive Dayton, OH 45432	\$10,000	2008	NA
Statewide Open-End Contract for Natural Resources, WV (2003)	WV Division of Highways State Capitol Complex 1900 Kanawha Blvd., East Building 5, Room A-416 Charleston, WV 25305-0430	NA	2007	NA
WV Route 9, Charlestown to VA Line, EIS Re-evaluation, Jefferson County, WV	WV Division of Highways State Capitol Complex 1900 Kanawha Blvd., East Building 5, Room A-416 Charleston, WV 25305-0430	\$153,000,000	2009	Y
Natural Resources Services Statewide, WV (2007)	WV Division of Highways State Capitol Complex 1900 Kanawha Blvd., East Building 5, Room A-416 Charleston, WV 25305-0430	NA	2009	NA
Statewide Open-End Contract for Cultural Resources Studies/Services, WV (2009)	WV Division of Highways State Capitol Complex 1900 Kanawha Blvd., East Building 5, Room A-416 Charleston, WV 25305-0430	NA	2011	NA
Open-End District-Wide Contract for Environmental and Engineering Services, PA (Agreement E00336)	PENNDOT Engineering District 12-0 P.O. Box 459 825 North Gallatin Avenue Extension Uniontown, PA 15401	NA	2008	NA
Mon/Fayette Expressway, Uniontown to Brownsville, Fayette and Washington Counties, PA	PA Turnpike Commission P.O. Box 67676 Harrisburg, PA 17106-7676	\$192,000,000	2008	Y

17. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM WAS THE DESIGNATED ENGINEER OF RECORD				
PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	YEAR	CONSTRUCTED (YES OR NO)
Statewide Open-End Archaeological Resources, DE (Agreement 1274)	Delaware Department of Transportation 800 Bay Road Dover, DE 19903	NA	2009	NA
Statewide Open-End Archaeological, DE (2007) (Agreement 1418)	Delaware Department of Transportation 800 Bay Road Dover, DE 19903	NA	2010	NA
PENNDOT Agencywide - Western Waste Management, PA (Agreement 354A02-2)	PENNDOT Bureau of Office Services P.O. Box 3060 Harrisburg, PA 17105	NA	2011	NA
PENNDOT Agencywide - Eastern Waste Management, PA (Agreement 354A02-1)	PENNDOT Bureau of Office Services P.O. Box 3060 Harrisburg, PA 17105	NA	2011	NA
PA Turnpike Commission Open-End Contract Environmental Services, Systemwide, PA	PA Turnpike Commission P.O. Box 67676 Harrisburg, PA 17106-7676	NA	2011	NA
PA Turnpike Commission, Open-End Contract for Waste Management System-Wide, PA (Agreement 2914)	PA Turnpike Commission P.O. Box 67676 Harrisburg, PA 17106-7676	NA	2011	NA
Statewide Open-End Contract for Management Services, PA (Agreement E00668)	PENNDOT Bureau of Design P.O. Box 3161 Harrisburg, PA 17105-3161	NA	2011	NA

18. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM HAS BEEN A SUB-CONSULTANT TO OTHER FIRMS (INDICATE PHASE OF WORK FOR WHICH YOUR FIRM WAS RESPONSIBLE)


PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST OF YOUR FIRM'S PORTION	YEAR	CONSTRUCTED (YES OR NO)	FIRM ASSOCIATED WITH
T.R. 711 Improvement Project EIS, Westmoreland County, PA	PENNDOT District 12-0 P.O. Box 459 825 North Gallatin Avenue Ext. Uniontown, PA 15401	\$650,000 (fee)	2008	NO	Sucevic, Piccolomini & Kuchar Engineering, Inc.
Western Parkway, Sussex County, DE	DelDOT 800 Bay Road PO Box 778 Dover, DE 19903	\$301,000 (fee)	2009	NO	Whitman Requardt & Associates
Painters Run Road Roadway Widening and Reconstruction, Allegheny County, PA	Allegheny County Dept. of Public Works 501 County Office Bldg. 542 Forbes Avenue Pittsburgh, PA 15219	\$213,000 (fee)	2010	NO	HDR, Inc.
Route 531 Extension Study, Route 36 to Redman Road, Monroe County, NY	NYSDOT Region 4 1530 Jefferson Road Rochester, NY 14623	\$94,000 (fee)	2010	NO	Stantec
PA Project of the Magnetic Levitation (MAGLEV) Transportation Project, Allegheny and Westmoreland Counties, PA	Port Authority of Allegheny County 345 -Sixth Avenue, 3 <sup>rd</sup> floor Pittsburgh, PA 15222-2527	\$1,500,000 (fee)	2010	NO	MSM Group Joint Venture
Barretts Chapel Road (SR 1 to McGinnis Pond Road), Kent County, DE	DelDOT 800 Bay Road PO Box 778 Dover, DE 19903	\$66,600 (fee)	2010	NO	Century Engineering
Mon/Fayette Expressway, PA Route 51 to I-376, Allegheny County, PA	PA Turnpike Commission P.O. Box 67676 Harrisburg, PA 17106-7676	\$500,000 (fee)	2011	NO	Mackin Engineering Company

18. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM HAS BEEN A SUB-CONSULTANT TO OTHER FIRMS (INDICATE PHASE OF WORK FOR WHICH YOUR FIRM WAS RESPONSIBLE)

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST OF YOUR FIRM'S PORTION	YEAR	CONSTRUCTED (YES OR NO)	FIRM ASSOCIATED WITH
S.R. 0286, Golden Mile Highway Improvements, Allegheny and Westmoreland Counties, PA	PENNDOT District 11-0 45 Thoms Run Road Bridgeville, PA 15017-2853	\$225,000 (fee)	2011	NO	AECOM
ID/IQ Contract for Geotechnical and Environmental Services, USACE, Pittsburgh District	USACE, Pittsburgh District 1000 Liberty Avenue W.S. Moorehead Federal Bldg. Pittsburgh, PA 15222	\$320,000 (fee)	2012	NA	D'Appolonia
ID/IQ Contract for Geotechnical and Environmental Services, USACE, Pittsburgh District	USACE, Pittsburgh District 1000 Liberty Avenue W.S. Moorehead Federal Bldg. Pittsburgh, PA 15222	\$293,000 (fee)	2012	NA	Rhea Engineers and Consultants, Inc.
Altoona Transportation Improvement Project, Blair County, PA	PENNDOT District 9-0 1620 North Juniata Street Hollidaysburg, PA 16648	\$146,000 (fee)	2012	NA	Sucevic, Piccolomini & Kuchar Engineering, Inc.

19. Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the West Virginia Abandoned Mine Lands Program.

20. The foregoing is a statement of facts.

Signature:  Title: Executive Vice President, Engineering  
 Printed Name: Mark A. Williams

Date: January 22, 2013

AML and RELATED PROJECT EXPERIENCE MATRIX																	PRIMARY STAFF PARTICIPATION/CAPACITY							
PROJECT	Exp. Basis C=Corp. P=Personal	Additional Info Provided in Section (s) **	PROJECT EXPERIENCE REQUIREMENTS														***M=Management P=Professional							
			Abandoned Surface Mine Reclamation	Abandoned Deep Mine Reclamation	Portal/Shaft Closure	Hydrologic/Hydraulic Design/Eval.	Remining Evaluation	Mine/Reuse Fire Abatement	Subsidence Investigation Mitigation	Hazardous Waste Disposal	Project Specifications	Water Quality Evaluation/Mitigation/ Replacement	Construction Inspection/ Management	Water Treatment	Equipment/Structure Removal	Stream Restoration	Geotechnical/Stability	Terry W. Schmidt, P.E.	Rex A. Peppler, P.E.	Bradley R. Shultz, E.I.T.	Mark A. Williams			
Kelly's Creek Watershed AMD Survey and Restoration Plan, Kanawha County, West Virginia	C	X																	M		P			
Valley Point #12 AMD Remediation Project, Preston County, West Virginia	C	X	X		X	X						X	X	X	X				X		P		P	
North Fork Greens Run AMD Remediation Project, Preston County, West Virginia	C	X					X					X	X	X	X				X		P			
Pole Bridge Road AML Remediation Project, Wise County, Virginia	C	X		X	X	X			X			X	X		X				X		M/P			
Red Ash Strip Mine & Gob Reclamation Project, Buchanan County, Virginia	C	X				X	X	X				X	X	X	X						M/P			
Government Financed Construction Contract AML Reclamation Projects, Clearfield County, Pennsylvania	C	X	X					X			X				X				X		M		P	
Armstrong Energy Comment Letter to PA DEP, Armstrong County, Pennsylvania	C	X				X			X														M/P	
Sequatchie Valley Coal Corporation, Sequatchie County, Tennessee	C	X	X			X	X					X	X	X	X						M		P	
Rausch Creek Land, L.P., Schuylkill County, Pennsylvania	C	X		X	X	X						X	X	X	X			X		M				



AML and RELATED PROJECT EXPERIENCE MATRIX																				
PROJECT	Exp. Basis C=Corp. P=Personal	Additional Info Provided in Section (s) **	PROJECT EXPERIENCE REQUIREMENTS														PRIMARY STAFF PARTICIPATION/CAPACITY ***M=Management P=Professional			
			Abandoned Surface Mine Reclamation	Abandoned Deep Mine Reclamation	Portal/Shaft Closure	Hydrologic/Hydraulic Design/Eval.	Remining Evaluation	Mine/Refuse Fire Abatement	Subsidence Investigation Mitigation	Hazardous Waste Disposal	Project Specifications	Water Quality Evaluation/Mitigation/ Replacement	Construction Inspection/ Management	Water Treatment	Equipment/Structure Removal	Stream Restoration	Geotechnical/Stability	Terry W. Schmidt, P.E.	Rex A. Peppler, P.E.	Bradley R. Shultz, E.I.T.
Six Mile Run, Sandy Run and Longs Run AMD Assessment and Remediation Plan, Bedford County, Pennsylvania	C	X	X	X	X	X														
Blackleggs Creek Acid Mine Drainage Discharge Treatment Projects, Indiana County, Pennsylvania	C	X	X	X	X	X	X				X								M/P	
Boyce Park Acid Mine Drainage Remediation Project, Allegheny County, Pennsylvania	C	X	X	X		X					X	X	X	X					M/P	
Gallentine AMD Remediation Project, Fayette County, Pennsylvania	C		X			X					X	X	X	X	X	X			P	
Sagamore/Max B. Noble AML/AMD Remediation Project, Fayette County, Pennsylvania	C		X			X					X	X	X	X	X	X			P	

\* List whether project experience is corporate or personnel based or both.

\*\* Use this area to provide specific sections or pages if needed for reference.

\*\*\* List Primary Design personnel and their functional capacity for the projects listed.

## **Supporting Information**

## REX A. PEPPLER, P.E., Engineering Manager



### EDUCATION:

M.S., Engineering Management, 1991, University of Tennessee, Kingsport, Tennessee

B.S., Civil Engineering, 1975, West Virginia Institute of Technology, Montgomery, West Virginia

### PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS:

Professional Engineer registered in Virginia, Tennessee, West Virginia, Kentucky

Class 2 Wastewater Works Operator, Virginia

Class II Waste Management Facility Operator, Virginia

### YEARS OF EXPERIENCE:

37 Years

Mr. Peppler was hired by Skelly and Loy, Inc. in September 2011 to manage the firm's office in Wise, Virginia. He is responsible for the day-to-day operations of the office, staff management, project management, and business development. The Wise, Virginia, office offers engineering design, permitting, computer-aided drafting, surveying, and field inspection work services. The professional engineers and technicians at this location are highly skilled and provide exemplary client services to the coal, utilities, and transportation industries.

### PROFESSIONAL EXPERIENCE

**MACTEC Engineering - Senior Principal Engineer** - Mr. Peppler developed the client base for landfill construction inspection and designed inspection documentation for team use. He managed construction quality assurance for industrial and commercial projects. He reviewed field reporting and documented progress summary reporting for clients. Mr. Peppler managed budgets and assignments for field technicians and engineers and reviewed designs. He administered the safety program for the office and brought the program into acceptance by major clients, causing the entire staff to participate and become accountable. This work actually saved the relationship with the largest client in the area. Mr. Peppler developed the activity program, including participation by client representatives and developed bids and client contacts.

**American Electric Power Clinch River Plant, Carbo, Virginia - Materials Handling Supervisor** - Mr. Peppler managed coal delivery to three generating units and disposal of solid waste from process. He developed accurate operating and capital improvements budgets. He planned and managed all landfill expansion and closure activities and also brought landfill activities back into acceptance by regulatory standards. Mr. Peppler accomplished installation for new truck and conveyor belt coal scales which enabled accurate measurements in accordance with SARBOX and company rules. He directed subordinates, contractors, and 16 members of the union workforce to control \$9 million of budget and 300+ acres. He led these various groups to perform complete and proper safety training resulting in a safer work place, and he was instrumental in new landfill site selection, saving the company significant costs over alternatives.

**Supervising Environmental Engineer** - Mr. Peppler measured and reported all air, water, and waste data in accordance with approved permits; collected and analyzed water samples for plant sewage treatment facility and industrial WWTP; compiled and submitted monthly DMRs for both water treatment facilities; communicated directly with Virginia regulatory personnel with regard to all air, water, and waste issues; documented special waste removal quantities with manifests; and created files and measurements which resulted in a successful environmental audit and established respected contact with local regulators. He instituted regular ash disposal pond inspections with appropriate record-keeping, developed forms and regimen for ash landfill inspections and monitoring, and performed regular inspections of water treatment systems and established a maintenance program for these areas. He conducted fugitive emissions evaluations throughout the plant yard, led the plant security force, and became trained as an Incident Commander and established annual training drills for response readiness including coordination with local fire and rescue services. Mr. Peppler established an agreement, which was published by AEP, to utilize waste material in a new way, saving the company a projected \$10M, led plant teams focusing on training and safe work practices, and developed a monthly newsletter for all plant personnel delivering safety and environmental messages for performance improvement.

## REX A. PEPPLER, P.E., Engineering Manager



**Project Engineer** - Mr. Peppler completed capital improvement projects for a landfill, new truck scales, and a new sewage treatment facility. He directed the work of various contractors to complete these projects on time and under budget. He developed forms for landfill and ash pond inspections and supervised grounds maintenance contractors. Mr. Peppler achieved facilitator status and assisted with training of teams for continuous improvement work. He led Behavior Based Safety efforts and Community Involvement Teams. He developed and implemented an innovative idea to manage ash waste ponds, enabling closure of one pond and eliminating a potential environmental hazard.

**Mead Corporation, Kingsport, Tennessee, Wood Yard/Landfill Supervisor** - Mr. Peppler managed a union team of 22 employees processing raw wood products for pulp mill and disposing of all solid waste at a captive landfill. He budgeted and planned the maintenance of equipment. He established 13 new production records in the first year through process improvements, including doubling production with no new equipment. These records were recognized throughout the mill. Mr. Peppler communicated with Tennessee Solid Waste regulatory personnel and implemented innovative method of managing landfill leachate.

**Project Engineer** - Mr. Peppler designed and implemented many improvement projects including pumps and piping systems, tanks and foundations, paper machine equipment foundations, conveyors and trusses, building and crane improvements and repairs, and complete change to main power boiler ID/FD fan arrangement. He was selected to attend ASME boiler and pressure vessel code repair training. He budgeted and purchased equipment and managed projects from start to finish. All projects met time and budgetary constraints. Mr. Peppler supervised the work of contractors and mill maintenance personnel on these projects and assisted other engineers as needed for civil and structural features. He reconstructed a critical section of the mill underground sewer during a brief outage, requiring temporary bypass of entire flow to the WWTP. He designed and installed a 200-foot pipe bridge spanning the mainline railroad.

**Tennessee Valley Authority, Various Locations, Nuclear Construction Quality Control Engineer** - Mr. Peppler led a group of concrete inspectors at Phipps Bend Nuclear Plant. He oversaw all concrete placement including construction of the 16-foot-thick reactor base mat.

**Office Engineer** - Mr. Peppler oversaw the reactor island construction on (what was to become) the world's largest nuclear power plant. He was responsible for design and drafting all construction features associated with this area of the facility. He designed enabling features including complex reinforced structure details which became a model for several similar nuclear plants under construction. He purchased code materials and inspected them for compliance.

### RELEVANT TRAINING

Approved OSHA 500 Construction Trainer - 10-hour and 30-hour courses

## ROBERT E. GOLKOSKY, P.E., Mining Engineer



### EDUCATION:

B.S., Mining Engineering,  
1966, The Pennsylvania State  
University

SOHIO Program for Middle  
Managers, 1984, University of  
New Hampshire

### PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS:

Professional Engineer  
registered in West Virginia,  
Virginia, Kentucky,  
Pennsylvania and Indiana

### CONTACT INFORMATION:

(276) 698-6474 - Mobile  
rgolkosky@gmail.com

### YEARS OF EXPERIENCE:

46 Years

Mr. Golkosky is a registered professional engineer with extensive experience in the coal mining industry. He has worked in senior management, operations, engineering, project management, acquisitions and consulting for several major mining and consulting companies. He has provided technical support and expert testimony in several litigation cases.

Mr. Golkosky's areas of specialization include international projects, project management/planning, economic evaluations, due diligence, mining engineering, and litigation support services.

### PROFESSIONAL EXPERIENCE

- **Associate Consultant** - Skelly and Loy, Inc. (2011-Present)
- **President** - GRE Mineral Services, LLC, Bristol, VA (2010-Present)
- **Senior Consultant** - ATS, Inc., Abingdon, VA (2001-2010)
- **Financial Advisor** - Prudential Securities, Inc. (1999-2001)
- **Senior Engineer** - Peabody Energy (1998-1999)
- **Director - Underground Services** - Marston & Marson, Inc. (1996-1998)
- **Vice President** - Anderson & Schwab, Inc. - Management Consultants (1995-1996)
- **Vice President** - Weir International Mining Consultants (1992-1995)
- **Associate Consultant** - Anderson & Schwab, Inc. (1990-1992)
- **Vice President of Exploration** - Royal Land Co. (1980-1990)

Mr. Golkosky has also held the following positions.

- Manager of Mine Planning
- Chief Engineer
- Vice President of Engineering
- Assistant Mine Superintendent
- Production Engineer

### PROFESSIONAL ASSOCIATIONS

- Society of Mining Engineers of AIME
- National Mining Association
- West Virginia Coal Association
- West Virginia Coal Mining Institute
- Kanawha Valley Mining Institute



## TERRY W. SCHMIDT, P.E., Vice President, Engineering



### EDUCATION:

M.S., Mining Engineering,  
1994, The Pennsylvania State  
University

B.S., Mining Engineering,  
1985, The Pennsylvania State  
University

### PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS:

Professional Engineer, PA,  
NC, TN, VA, MD, OH

### YEARS OF EXPERIENCE:

26 Years

As an Associate of the firm and Vice President (VP) of Skelly and Loy's Engineering Group, Mr. Schmidt has served as VP-in-Charge of many complex projects, coordinating project and activities on a corporate basis. Mr. Schmidt has more than 26 years of diversified experience in the engineering disciplines, including 22 as an employee of Skelly and Loy. His areas of expertise include: mine planning and analysis; mineral property reserve assessments; land development; planning and analysis; assessments; permit preparation; surface and groundwater hydrologic investigations and modeling; water treatment system evaluations; stormwater management; and NPDES permit negotiation. He has prepared detailed life-of-quarry mining plans for large aggregate producers and mine plans for coal producers. In addition, he has prepared numerous coal and non-coal surface mine permit applications.

### PROFESSIONAL EXPERIENCE

**Maryland State Highway Administration** - Rehabilitated two leachate treatment systems that had been installed to treat highway runoff and groundwater discharge from the embankment of U.S. Route 68. Responsibilities included evaluation of systems operations, analyses of water quality data, development of rehabilitation and operation and maintenance plans, supervision of construction, preparation of as-built drawings, and long-term monitoring of systems performance.

**Cloud Peak Energy Resources** - Served as VP-In-Charge in surface mine reclamation planning and an acid mine drainage assessments in Tennessee. Conducted laboratory and on-site treatability studies to define effective chemical treatment approaches and assisted in the design of passive treatment systems. Defined and mapped groundwater basin recharge areas and evaluated the impacts of pumping activities on the regional groundwater flow. Evaluated the hydrologic impacts of the surface coal mine reclamation activities on the receiving streams. Developed interim and long term reclamation plans for over 1,000 acres of surface mine area.

**C/G Electrodes** - Investigated 42 water discharge locations from a large graphite producer which discharges a combination of acid mine drainage, industrial process wastewater, stormwater, and various other flows which enter the site. Conducted dye tests, performed flow measurements, implemented a sampling and testing program, prepared reports of findings, prepared an Industrial Process Wastewater NPDES Permit, and attended negotiation meetings with the State regulatory agency.

**Tennessee Valley Authority** - Served as Principal Investigator in an evaluation of chemical and passive treatment systems for mine drainage in Alabama. Evaluated current treatment systems and suggested potential cost-effective improvements to existing and planned treatment systems. Conducted treatment studies for fluoride reduction in mine reclamation area runoff water. Two methods of fluoride reduction were studied in the laboratory: ion exchange and uptake by soil materials. Assisted in the design of the full scale treatment system using uptake by soil materials.

**Quarry Development Projects** - Served as Engineer-In-Charge for numerous quarry development projects in North Carolina, Pennsylvania, Virginia, Maryland, and Tennessee. Projects in North Carolina have included Benson Quarry, 115 Quarry, Enka Quarry, North Quarry, Statesville Quarry, and Shelton Quarry. Mr. Schmidt's responsibilities in these projects have included the



completion of local and State permit applications with complete site layouts, erosion and sediment control plans, and drainage system designs.

**Cogeneration Projects** - Mr. Schmidt completed several bituminous and anthracite coal refuse cogeneration projects in West Virginia and Pennsylvania. Project tasks included developing and carrying out drilling programs for available coal refuse piles and determining the quantity and quality of fuel confirmed at each of the coal refuse sites investigated. Mr. Schmidt also assisted in an anthracite silt pelletizing project. In addition, Mr. Schmidt analyzed material handling systems and developed a listing of limestone producers capable of supplying high calcium carbonate limestone for use in fluidized beds.

**Confidential Client** - Mr. Schmidt completed an audit of computer systems used for mine planning at a large surface coal mine in South Africa. This audit included an evaluation of the geologic database, the use of the database within software packages employed, and the use and validity of computer generated output.

**Confidential Client** - Mr. Schmidt completed a computer assisted mine plan analysis of a large midwest coal producer. He assessed in-place reserve quality and quantity, estimated recoverability based on existing structural conditions, estimated coal quality dilution, and analyzed alternative mine planning scenarios. He conducted quarterly mine audits to assess the reasonableness of costs associated with mining practices utilized. Additionally, Mr. Schmidt provided legal assistance during disputes between the coal producer and a large midwest utility.

**Confidential Client** - Mr. Schmidt performed a detailed surface coal mining regulatory review in the state of Indiana. He also assisted in assessing the impact of changing regulations on reclamation costs and performance at a large Indiana surface coal mine.

**Confidential Client** - Mr. Schmidt completed the valuation of all coal holdings of a sizeable U.S. coal producer. The project included: development of mine planning scenarios, review and verification of the coal reserve database; a summary of all reserves and operations; and a valuation of coal reserves and long term contracts.

**Confidential Client** - Mr. Schmidt completed an evaluation of contract price increases based on increasing mining costs for a major mid-west utility. He also supplied legal assistance to that utility during a Public Service Commission hearing concerning contract price escalations.

**Woodduck Chapter of Trout Unlimited** - On behalf of the Woodduck Chapter of Trout Unlimited with funding provided by Pennsylvania's Growing Greener program, Mr. Schmidt managed the design and construction of an acid mine drainage treatment system. Based on a thorough evaluation of site conditions and water quality data, he designed a Vertical Flow Reactor (VFR) to treat the main AMD seep known as "Chiller Seep". Components of the system include a layer of compost to strip oxygen followed by contact with limestone to impart alkalinity. The net alkaline water is then routed through pond and wetland cells for precipitation of metals. The system also includes a passive flushing technology for removal of aluminum.

**West Branch Sportsmen** - Evaluated AMD treatment alternatives for this tributary to the Susquehanna River under a contract with The Freshwater Institute, an arm of The Conservation Fund. Project activities included comprehensive field investigations, data evaluations, and engineering design package preparation. Engineered a passive, periodic flushing system that maintains the hydraulic conductivity and treatment performance of an open limestone pond system. The treatment system consists of independent open limestone cells for alkalinity addition and two wetland cells in series for settling precipitated metals.

**Friedline Mine Site, Pennsylvania** - Currently directing the assessment and rehabilitation of an operating passive AMD treatment system. Managing the evaluation of water quality data, review of SAPS engineering drawings, and coordination with regulatory agencies. Supervising system restoration to include installation of an aluminum recovery loop, removal and replacement of iron/compost layer, inspection of limestone layer and replacement if necessary, upgrade of flushing system, and lining the outflow channel with limestone. Developed a plan to capture newly formed seeps and direct them to a new open limestone pond.

**Raccoon Creek Watershed Association** - Completed a Watershed Abandoned Mine Drainage (AMD) Survey and Preliminary Restoration Plan for the Raccoon Creek watershed located in western Pennsylvania. Working closely



with local groups, concerned citizens and government agencies, Mr. Schmidt identified significant AMD discharge sources and quantified impacts to the watershed. As a result, remediation methods were identified and cost estimates were developed for future remediation actions for the seven highest prioritized AMD discharges.

**Port Matilda Borough** – As Borough Engineer, Skelly and Loy is responsible for Borough roads, streets, and water system. Working closely with the Borough, Skelly and Loy is determining future water and wastewater needs, identifying needed improvements to streets and roads, and providing land surveying as well as other professional services. Completed design for Little League baseball field.

**South Lebanon Township** – As Township Engineer, Skelly and Loy was responsible for reviewing the plans for the AES Ironwood Facility, a 700 megawatt gas-fired electricity generated facility. Responsibilities included reviewing the engineering site plans including stormwater management, erosion and sedimentation plans, and zoning and land development issues. Also, directed construction inspection duties and provided construction inspection reports.

**West Donegal Township** – As Township Engineer, Skelly and Loy was responsible for completion of the Act 537 Official Sewage Facilities Plan. Worked closely with the Township in supporting the development of zoning ordinance as well as subdivision and land development ordinances. Responsibilities encompassed transportation planning, with specific projects including intersection redesign and obtainment of Highway Occupancy Permits. Completed numerous miscellaneous municipal engineering projects involving as the design of a salt shed, surveying, and grading.

**Intercon Systems, Inc.** - Managed the preparation of site development plans prepared for this industrial facility which included 5 buildings to house both office and light manufacturing for a total of 105,000 square feet under roof and 350 parking spaces. The project included general layout, grading plans, parking lot layout, and erosion and sediment control plans. The project also included a hydrologic assessment report which evaluated a parking lot drainage network and other stormwater drainage.

**Palmer Facilities** - Directed this site development project which involved general layout, grading plans, parking lot layout, and erosion and sediment control plans. The project also included a hydrologic report which addressed special concerns associated with work performed within the floodplain.

**Duncan Smith Dam** - Managed the completion of a dam design for the Duncan Smith project in Maryland. Special concerns addressed in the project include innovative pond inlet and outlet structures designed to minimize thermal impacts to the receiving stream. The project also involved surface hydrology, grading, erosion and sediment control, and associated plans and specifications.

**Dover Road Dam** - Directed the project team responsible for the dam design for the Dover Road Residence project in Maryland. The project involved surface hydrology, grading, outlet structure design, erosion and sediment control, and associated plans and specifications. Additionally, recommendations were made to reduce the potential for pond leakage into a pinnacle limestone formation which outcrops near the base of the pond.

**Whitetail Ski Resort** - Provided design engineering for the site development planning for Whitetail Ski Resort, Montadale Crest housing development, and Chester Industrial Highway. Mr. Schmidt's responsibilities on these projects have included erosion and sediment control design, construction supervision, wetland mitigation design, and review of plans, specifications, and engineering drawings.

**Tyco Electronics** - Provided site development planning and engineering design services for several AMP, Inc. facilities including Harrisonburg, Fulling Mill Road, and Rapho Township. Mr. Schmidt's responsibilities in these projects have included general site layout, drainage system design, erosion and sediment control design, and permit procurement.

**Graduate Studies** - While working towards an M.S. in Mining Engineering at Penn State University, assisted in the development of the software package "REMINE." Responsible for writing the Basic computer code and associated user's manual sections for one module. "REMINE" is a commercially available software package used for Best Professional Judgment Analysis required by the Federal Clean Water Act to obtain a surface mining permit for remining of abandoned mine lands with pre-existing pollutional discharges. "REMINE" was developed under the



## TERRY W. SCHMIDT, P.E., Vice President, Engineering



cooperation of the Environmental Protection Agency, the Pennsylvania Department of Environmental Resources, and Penn State University.

Surface Coal Mine Operator, W. Schmidt Coal Company. - Mr. Schmidt operated surface coal mines for W. Schmidt Coal Company for approximately four years. He was responsible for all aspects of mining operation from property evaluation through job completion. More specifically, Mr. Schmidt's duties included the implementation of drilling programs, permitting, erosion and sedimentation design, bookkeeping, environmental compliance, and mine planning.

### PUBLICATIONS

"Acid Rock Drainage Prevention Aided by LKD", published in Industrial WaterWorld magazine, July/August, 2008 (author)

"Assessment of ECOTITE for Use in Acid Rock Drainage Treatment" presented at the 2007 National Meeting of the American Society for Surface Mining and Reclamation, Gillette Wyoming (principal author)

"Evaluation of Aeration Techniques for Mine Water Treatment in Passive Systems", presented at the 2004 National Meeting of the American Society for Surface Mining and Reclamation and The 25th West Virginia Surface Mine Drainage Task Force Symposium, Morgantown, West Virginia (author)

"Dry Creek Abandoned Mine Restoration Demonstration Project: A Cooperative Effort", presented at the 2003 National Meeting of the American Society for Surface Mining and Reclamation and The 9th Billings Land Reclamation Symposium, Billings, Montana, (co-author)

"Evaluating Successes in Passive Treatment at Sequatchie Valley Coal Corporation in East Central Tennessee", presented at the 2001 National Meeting of the American Society for Surface Mining and Reclamation, Albuquerque, New Mexico, (principal author)

"Passive, Periodic Flushing Technology for Mine Drainage Treatment Systems", presented at the 2001 National Meeting of the American Society for Surface Mining and Reclamation, Albuquerque, New Mexico, (co-author)

"Prediction of Water Quality at Surface Coal Mines", published by National Mine Land Reclamation Center, Morgantown, West Virginia, 2001, (contributing author)

"Assessment of the Applicability of an Anoxic Limestone Drain for a Surface Mine in East Central Tennessee", presented at the 1996 National Meeting of the American Society for Surface Mining and Reclamation, Knoxville, Tennessee, (principal author and presenter).

"Coal Remining Analysis for Maximum Resource Recovery and Environmental Improvement", Master of Science Thesis, The Pennsylvania State University, 1994.

"Remine: A Computer Program for the Analysis of Abandoned Mine Lands Projects in the United States": presented at the Surface Coal Mining and Reclamation Symposium in Alberta, Canada, 1988 (coauthor).

### PROFESSIONAL AFFILIATIONS

Pennsylvania Association of Environmental Professionals  
The Society of Mining Engineers of America - Institute of Mining Engineers  
The American Society for Surface Mining and Reclamation  
American Institute of Mining Engineers  
Penn Anthracite American Institute of Mining Engineers  
Acid Drainage Technology Initiative (ADTI)

## BRADLEY R. SHULTZ, E.I.T., Senior Acid Rock Drainage Specialist



### EDUCATION:

B.S., Biology with option on Marine/Aquatic, 1993, Millersville University

M.E.P.C., Environmental Pollution Control, 2002, The Pennsylvania State University

### PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS:

Engineer In Training, PA

### YEARS OF EXPERIENCE:

15 Years

Mr. Shultz joined Skelly and Loy with a strong foundation of water chemistry and water/wastewater treatment experience having worked for over eight years in the environmental consulting and laboratory industries. As a result, he is adept at assessing mine drainage problems utilizing a watershed approach and relating to the chemistry for treating AMD discharges. During his investigations of various water quality related issues and associated remediation efforts, he has performed water sample collection and analysis, evaluated flow rates, evaluated aeration system and chemical treatment efficiency for hydrogen sulfide odor abatement, tracer studies for water quality and hydraulic evaluations, set-up and maintained databases, performed water quality modeling efforts, and analyzed the results to determine applicable treatment technologies. In addition, he has maintained and monitored the performance of water quality enhancement and treatment systems to ensure compliance with permit requirements as well as optimizing treatment effectiveness.

### PROFESSIONAL EXPERIENCE

**Treatment Evaluation of the Askam Borehole AMD, Nanticoke, PA -** Mr. Shultz served as the lead scientist for the bench-scale testing evaluation of treatment options for the net alkaline AMD flowing from the Askam Borehole directly into Nanticoke Creek. The Askam Borehole AMD was characterized as a high flow net alkaline discharge with high levels of dissolved ferrous iron. Mr. Shultz oversaw the field data collection efforts and bench-scale testing for alkaline addition, aeration, and a combination of the two for the most cost effective treatment for iron removal of the AMD. Mr. Shultz also conducted extensive research on the history of the borehole, associated mine pool, and mining activities in the area to better understand the system hydrology.

**PennDOT I-99 Sections A-12 and C-12, State College, PA -** The acid rock drainage (ARD) created by the placement of unearthed pyritic material into fill areas, required chemical treatment systems in the existing sediment basins for increasing the pH and removing the metals of the ARD streams. Mr. Shultz helped coordinate the placement and operation of the active chemical treatment systems as well as providing the design and operational procedures for additional chemical treatment basins at the site. Mr. Shultz also coordinated the set-up and initiation of the sludge removal and handling process for the six basins used for chemical treatment of the ARD streams. Additionally, he coordinated the design and construction of the grading, contouring, and covering of two of the pyritic fill areas to prevent runoff infiltration and helped design the associated stormwater runoff handling system for the impervious areas. As part of the final remediation efforts at the site following the final placement of a majority of the pyritic material within a constructed landfill, Mr. Shultz helped lead the design team for the long-term passive and semi-active treatment of the remaining ARD from the entire site, which included both flushable limestone-based treatment components and chemical treatment processes to meet effluent limits.

**Broad Top Township, PA -** Mr. Shultz has served as the project manager for the design, permitting, and construction of more than a dozen passive AMD treatment systems in Broad Top Township. Initially, Mr. Shultz was assigned as the project manager for the Longs Run Phase II AMD remediation projects funded under Growing Greener grants in 2004. As the project manager for this project, Mr. Shultz was responsible for the design, permitting, construction monitoring, and final system effectiveness testing work associated with the passive treatment systems necessary for the six AMD discharges. Mr. Shultz

BRADLEY R. SHULTZ, E.I.T., Senior Acid Rock Drainage Specialist



helped perform the final system effectiveness testing on the Longs Run Phase I AMD passive treatment systems for seven AMD discharges in the watershed. Mr. Shultz was also the project manager for the Finleyville site AMD passive treatment system project for three aluminum laden AMD discharges in the Six Mile Run watershed, funded by a Growing Greener grant. The Finleyville project involved the design, construction monitoring, and final system effectiveness testing work associated with the passive AMD treatment systems for the site. Mr. Shultz has most recently managed the design, permitting, and construction of multiple AMD projects within the Six Mile Run and Sandy Run watersheds that required the use of mine seals, mine pool manipulation, and treatment technologies capable of treating high flow and/or high level acidity discharges. Mr. Shultz continues to work with Township on system improvements, maintenance, and the refinement of passive treatment technologies using an anticipated maintenance approach to maintain system effectiveness for highly contaminated AMD discharges.

**Blackleggs Creek Watershed Association & Trout Nursery, Indiana County, PA** - Mr. Shultz assisted and directed the design of two of the final treatment systems to restore Big Run and lower half of Blackleggs Creek for a put-and-take trout fishery. The Big Run #8 passive AMD treatment system addressed the largest AMD contributor in the Big Run watershed and required the design of a sophisticated capture system of the AMD from the old underground mine tunnel at least twenty feet in elevation below the available treatment area. Two large oxic limestone beds and a settling pond were designed within the available area to provide passive alkaline treatment for the net acidic and high flow Big Run #8 AMD discharge. The outfall from the Big Run #8 along with the Big Run #7 passive AMD treatment system were incorporated into the design of a semi-active chemical treatment system to further remediate the two discharges and provide excess alkalinity in Big Run due to the accessibility issues for trying to capture and treat the Big Run #3 AMD discharge. Mr. Shultz led the design team for the Big Run #3 system to incorporate a hydraulically driven tipping bucket hydrated lime dispensing unit along with a 30-ton silo for the addition of alkalinity into the passively treated Big Run #7 and #8 AMD. A rock-lined mixing channel, large settling pond, polishing wetland, and sludge dewatering basin were the other key components of the Big Run #3 treatment system design that is scheduled for construction completion in 2011.

**Huntingdon County Conservation District, Huntingdon, PA** - Mr. Shultz was assigned as the project manager for the Miller Run, and Old Never Sweat AMD passive treatment projects. Both projects were funded under Pennsylvania's Growing Greener Grant program. The Miller Run project involved the design of two passive treatment systems for two discharges, both characterized as acidic seeps or discharges with elevated aluminum concentrations. The Old Never Sweat AMD projects involved the design and construction oversight of a passive treatment system at the site to remove the aluminum and associated acidity through the departing of alkalinity through the use of a large flushing limestone pond.

**Passive AMD Treatment System Effectiveness Testing** - Mr. Shultz has performed and trained personnel in the water chemistry testing work associated with the field evaluation of passive AMD treatment systems designed by Skelly and Loy and other firms in both Pennsylvania and Maryland. Mr. Shultz has also worked on projects to incorporate alkaline chemical treatment technologies as needed within an existing passive treatment system in order for the client to meet effluent permit limits on both an interim and permanent basis. Mr. Shultz has also conducted routine operations and maintenance activities for a passive treatment system in western Pennsylvania in order to maintain the system effectiveness and permeability of the limestone-based treatment system components.

**Lake Wallenpaupack Hydrogen Sulfide Remediation Project, Hawley, PA** - At his previous employer as a Water Quality Scientist, Mr. Shultz managed the hydrogen sulfide evaluation study at PPL's Lake Wallenpaupack Hydroelectric Project. Mr. Shultz handled the contracting and management of field staff, budget and technical oversight, design and construction of the field testing system for the hydrogen sulfide treatment evaluation using either or both chemical and aeration techniques to reduce or eliminate hydrogen sulfide odors. Following the 2002 evaluation, in 2003 Mr. Shultz coordinated a study on the use of an in-lake aeration system for reducing the hydrogen sulfide odors associated with operation of the hydroelectric project, which provided further insight on the effectiveness of this type of abatement system. Tracer studies were conducted using both pH and conductivity in the lake and discharge to understand the hydraulic withdrawal zone of the project.

**Various Hydroelectric Project Water Quality Evaluations and Assessments, USA** - At his previous employer as a Water Quality Scientist, Mr. Shultz handled numerous water quality investigation, evaluations, and assessments related to various issues at several hydroelectric projects throughout the country. As part of the assessment, water quality modeling was necessary to accurately predict water quality in both the impoundment and project discharge to

## BRADLEY R. SHULTZ, E.I.T., Senior Acid Rock Drainage Specialist



help understand what improvements tools were best suited for improving the discharge water quality to meet state limits. The evaluations included tracer studies using temperature, pH, and conductivity as parameters for understanding the withdrawal zones for the various hydroelectric projects and how the in-lake and discharge profiles were related. Other related experiences involved assessing multiple year data collection efforts for comparison to state discharge requirements and using those results to evaluate water quality improvement measures at projects.

### RELEVANT TRAINING

In the summer of 2003, Mr. Shultz attended a week long training workshop sponsored by the US Army Corps of Engineers and Portland State University for CE-QUAL-W2, a two-dimensional hydrodynamic and water quality model.

### PUBLICATIONS

Proceedings of the 2002 HydroVision Conference in Portland, Oregon:

Paper Title - "Water Quality Enhancements of the PPL Lake Wallenpaupack Project Hydroelectric Discharge Into the Lackawaxen River"

Keystone Water Quality Manager (Publication of PWEA):

Paper Title - "Using Acid Mine Drainage Sludge for Metals Removal in Wastewater"

Keystone Water Quality Manager (Publication of PWEA):

Paper Title - "Preliminary Studies on Hydrogen Sulfide Removal"

Aquatic Geochemistry

Paper Title - "Iron and sulfur chemistry in a stratified lake system"

Proceedings of the 2007 American Society of Mining and Reclamation Conference in Gillette, Wyoming:

Paper Title - "Assessment of ECOTITE™ for Use in Acid Rock Drainage Treatment"

Proceedings of the 2010 American Society of Mining and Reclamation Conference in Pittsburgh, Pennsylvania:

Paper Title - "Assessment of the Applicability of Steel Slag for Alkaline Addition to Acidic Streams in South Central Pennsylvania"

### PROFESSIONAL AFFILIATIONS

Previous Member of the Following Organizations:

North American Lake Management Society (NALMS)

Water Environment Federation (WEF)

American Water Resources Association (AWRA)

Society for Environmental Toxicology and Chemistry (SETAC)

### HONORS AND AWARDS

Pennsylvania Water Environment Association (PWEA): 2002 and 2003 Student Research Award Recipient

BRADLEY R. SHULTZ, E.I.T., Senior Acid Rock Drainage Specialist



## R. H. (HOLLAND) STURGILL, JR., Engineering Technician



### EDUCATION:

A.A.S., Drafting and Design,  
1985, Mountain Empire  
Community College

### YEARS OF EXPERIENCE:

27 Years

As an Engineering Technician, Mr. Sturgill prepares maps, plans, cross sections, and other types of drawings; and drainage, excavation, site plans; and computes earthwork cut and fill volumes; designs drainage structures, valley fills, and roads; assists in preparing permit applications, reserve studies, and other technical reports; and performs GPS, RTK, and conventional field surveys. For more than 27 years, he has been providing various professional services to the mining, oil, and gas industries. As the owner of a full-service construction company, Mr. Sturgill is also accomplished in construction planning, design, and cost estimation.

### PROFESSIONAL EXPERIENCE

**Owner/Manager, R.H. Sturgill Construction Co. Inc., Pound, VA** - A full service construction company providing new construction and remodeling. Ability to provide clients with pre-construction planning, design and cost estimation. Also providing construction scheduling, coordination, and management. Services also provided for residential and commercial property maintenance.

**Owner/Manager, DLS & Associates, Pound, VA** - Provided contract services to Marshall Miller & Associates. Services included all layout/surveying/design of gas well sites, roads, and pipeline routes for largest CBM producer in Southwest Virginia.

Performed GPS control surveys/monumentation in order to perform integrity studies of major distribution pipelines. Worked closely with company land agents and property owners to locate and acquire well site locations, and road and pipeline right-of-ways. Field layout/flagging of all pipeline routes prior to permitting and the preparation of "as-built" drawings once completed.

**Project Manager, Marshall Miller & Associates, Norton, VA (WS&A was acquired by MM&A)** - Responsibilities included the supervision and management of all DMLR and DG&O permitting for MM&A's Norton office. Duties included the design/layout/surveying of well sites, associated access roads, and pipeline right-of-ways. Also responsible for the preparation of all construction plans and drawings necessary to obtain DG&O approval. Also performed "as-built" surveys for completed pipeline routes and provided design and permit services for various mining operations including deep mines, ventilations shaft sites, and strip mining operations.

**Senior Engineering Technician, Willis-Skeen & Associates, Norton, VA** - Responsibilities included preparation of all DMLR permits and revisions. Assisted project engineer with preparation of construction plans and drawings for various civil projects including airports, landfills, and golf courses. Performed construction inspection including building and site stakeout and, cut/fill and nuclear density compaction testing. Also responsible for the coordination and scheduling of outside surveying services used in the preparation of oil and gas permits for local gas companies.

**Owner/Contractor, R.H. Sturgill Construction Co. Inc.** - All types of new residential construction and remodeling including carpentry, masonry, concrete, tile, hardwood, electrical, and plumbing services; also provide residential and commercial property maintenance.

**Engineering Technician, Tuck Engineering and Aerial Mapping, Big Stone Gap, VA** - Responsibilities included the preparation of narratives, plans,

R. H. (HOLLAND) STURGILL, JR., Engineering Technician

Skelly and Loy, Inc.  
Wise, VA



## R. H. (HOLLAND) STURGILL, JR., Engineering Technician

drawings, and maps required for DMLR permitting of underground and surface operations. Conducted water supply inventories, surface and groundwater sampling, and impoundment inspections. Also assisted engineer with flight planning and establishment of control surveys for aerial mapping projects. Also compiled data from aerial survey mapping in the preparation of volumetric computations for inventory of various types of stockpiles including coal, magnetite, and sand/gravel.

**Permit/Drafting Technician, Part Time-College Co-Op, Tuck Engineering, Big Stone Gap, VA** - Responsibilities included the preparation of narratives, plans, drawings, and maps necessary to obtain mining permits and revisions from DMLR for various mining companies located in Wise County, VA, and surrounding counties.

**Drafting Technician, Part Time-College Co-Op, Joy Manufacturing, Duffield, VA** - Responsible for preparing full-scale templates for the engineering department to be used in the total in-house rebuild of all of Joy Manufacturing miners, shuttle cars, and cutting machines.

R. H. (HOLLAND) STURGILL, JR., Engineering Technician



**PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS:**

Registered Land Surveyor,  
Virginia and Kentucky

**YEARS OF EXPERIENCE:**

41 Years

Roy Balthis is a Land Surveyor providing support service to the Wise, Virginia office of Skelly and Loy, Inc. In this role, Mr. Balthis' responsibilities include providing field services with complete responsibility to lead survey parties performing boundary surveys, mapping, and gathering data and information to establish plans, cross sections, drainage plans and other engineering and technical documents. His work may also involve measuring volumes for earthwork; stockpile measurements; verifying drainage and structural features; layout and verification of roads, ditches, culverts, and other technical aspects of plans and permits as required by clients of the firm.

Mr. Balthis has over forty years of responsible experience in the field of surveying. He has performed work for various entities throughout Southwest Virginia and Eastern Kentucky to the complete satisfaction of municipal, federal, and private clients in the region. He is a respected surveyor who understands all aspects of modern surveying and mapping technology.

**PROFESSIONAL EXPERIENCE**

Mr. Balthis has performed large boundary surveys for the U.S. Forest Service. He has provided surveying services for the Industrial Development Authorities of Wise County and the Town of St. Paul; property and boundary work for the Towns of St. Paul, Pound, and Wise; and surveying for Wise County. Mr. Balthis has successfully completed projects for such private clients as Paramount Land Company, Barnette Contractors, Paramount Coal Company, Barnette Enterprises, Double Kwik Markets, and A&G Coal Company over the years.

He has regularly performed deed research; preparation of survey plats; and deed descriptions for property purchases associated with banks and lending institutions. Mr. Balthis has performed important flood insurance surveys as well. Much of his work has been in the Virginia counties of Wise, Dickenson, and Buchanan and in Letcher County, Kentucky.

DARRYL L. WHITE, Design Technician



**EDUCATION:**

Associate Degree,  
Computer Aided Drafting  
and Design, 2011,  
Mountain Empire  
Community College

**YEARS OF EXPERIENCE:**

4 Years

Mr. White responsibilities include developing maps and mine plans operations in West Virginia and Virginia, performing volumetric calculations, grading and drainage designs, coal reserve studies, and pond inspections for certification for various clients in Southwest Virginia. Mr. White also assisted with bridge designs and other civil features for clients.

**PROFESSIONAL EXPERIENCE**

**Appalachian Technical Service, Design Technician** - Use of AutoCAD and Carlson Programs to design maps; calculate volumes for mining plans, and use of SedCAD for drainage designs.

**MidMountain Foods, Abingdon, VA, Order Selector** - Essential Functions include data entry (Input daily work orders into a computer database), machine inspection, forklift operation, and warehouse safety. Other responsibilities consist of shipping, pulling orders, and loading trucks. In addition, I have great attention for detail, have the ability to handle time restraints and can interact courteously with managers, customers, and vendors.

**Bristol Compressors, Bristol, VA, Machine Operator** - Study blueprints, layout, or chary, to visualize work and determine materials needed, sequence of operations, dimensions, and tooling instruction. Compute specific dimensions and machine settings, using knowledge of metal properties and shop mathematics. Position, secure, and align cutting tools I tool holders on machine, using hand tools, and verify their position with measuring instruments

**U.S. Army, Topographic Analyst** - Trained for nine weeks of Basic training learning basic Soldering skills, and 18 weeks of Advanced Individual Training. This included practice on operating topographical equipment. Part of this time was spent in the classroom and in the field where learning surveying and drafting techniques (Making scale drawings of roads, airfields, buildings and other military projects), aerial photo interpretation and architectural and structural drawings.

DARRYL L. WHITE, Design Technician



## REFERENCES



**Mr. Randy R. Casey, P.E. – Director**  
**Division of Mined Land Reclamation**  
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Big Stone Gap, VA 24219  
276-523-8286  
Randy.casey@dmme.virginia.gov

**Mr. Richard V. Davis, Jr. – Project Coordinator, AML**  
**Virginia DMME Div. of Mined Land Reclamation**  
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Big Stone Gap, VA 24219  
276-523-8216  
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**Mr. Tim Anders - Owner**  
**Circle L Land Company, Inc.**  
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**Mr. Todd Tackett – Sr. VP of Engineering**  
**Revelation Energy**  
160 Lank Branch, Suite 2  
Pikeville, KY 41501  
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**Mr. David Barnette – Owner**  
**Barnette Contractors, LLC**  
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**Ms. Margie Horton – Project Manager**  
**Environmental Monitoring, Inc.**  
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Norton, VA 24273  
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**Mr. Phillip C. Mullins – Director / Environmental Compliance & Reclamation**  
**Alpha Natural Resources**  
P.O. Box 16429  
Bristol, VA 24209  
pcmullins@alphanr.com  
276-739-5308

REFERENCES



STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS

To all to whom these presents shall come, Greeting  
Know Ye That The State Board of Registration for Professional Engineers,  
of the State of West Virginia, reposing special confidence in  
the Intelligence, Integrity and Discretion of  
Rex Allen Peppler

DOES, IN PURSUANCE OF AUTHORITY VESTED IN IT  
by law, hereby certify that he, having submitted  
satisfactory evidence of his ability and experience, is a  
REGISTERED PROFESSIONAL ENGINEER

Registration Number 8412

To Hold and use such title, in the practice of his profession,  
subject to the conditions prescribed by law.

Given under the hand and the Seal  
of the Board, at the Capitol in the  
City of Charleston,  
this 18th day of July in the  
year of our Lord One Thousand  
Nine Hundred and Eighty  
and of the State the One Hundred  
Seventeenth.



STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS

William E. Morris II Secretary      By Robert E. Schmitt President  
Bill L. Atchley



STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS

To all to whom these presents shall come Greeting

Know Ye that The State Board of Registration for Professional Engineers of the State of West Virginia, regarding special confidence in the Intelligence, Integrity and Dexterity of

Robert E. Golkosky

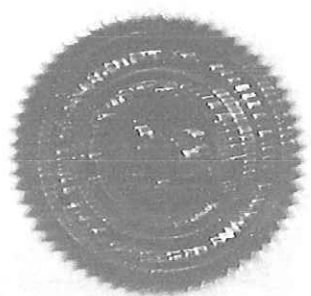
Does, in Pursuance of Authority Vested in it

by law, hereby certify that he having submitted satisfactory evidence of his ability and experience is a

REGISTERED PROFESSIONAL ENGINEER

Registration Number 12554

To hold and use such title in the practice of his profession subject to the conditions prescribed by law



Given under the hand and the seal of the Board at the Capitol in the City of Charleston this 21st day of Feb in the year of our Lord One Thousand Nine Hundred and Ninety-five and of the State the One Hundred Thirty-first.

STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS

W. C. [Signature]

[Signature]

Respectfully, Robert E. Golkosky

DISPLAY THIS CERTIFICATE PROMINENTLY • NOTIFY AGENCY WITHIN 10 DAYS OF ANY CHANGE

Commonwealth of Pennsylvania  
Department of State  
Bureau of Professional and Occupational Affairs  
PO Box 2630 Harrisburg PA 17105

10 05 30684



License Type  
Professional Engineer

License Status  
Active

Initial License Date  
02/22/1994

BRENN SCHMIDT  
17 GREGORY DRIVE  
MIDDLETOWN, PA 17059

License Number  
[REDACTED]

Expiration Date  
09/30/2013

*[Signature]*

*[Signature]*

Bureau of Professional and Occupational Affairs

ALTERATION OF THIS DOCUMENT IS A CRIMINAL OFFENSE UNDER 18 P.A.C.S. 4911





STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS

To all to whom these presents shall come Greeting  
"Know Ye" That The State Board of Registration for Professional Engineers  
of the State of West Virginia, reposing special confidence in  
the Intelligence, Integrity and Discretion of

Gerald M. Longenecker

DOES IN PURSUANCE OF AUTHORITY VESTED IN IT  
by law hereby certify that he having submitted  
satisfactory evidence of his ability and experience is a

REGISTERED PROFESSIONAL ENGINEER

Registration Number 18491

(To Hold) and use such title in the practice of his profession,  
subject to the conditions prescribed by law.



Given under the hand of the  
Seal of the Board at the Capitol in the  
City of Charleston,  
This 11th day of January  
in the year of our Lord 2010  
and of the State  
the One Hundred Forty-Sixth

Members of the Board

Lester J. Thomas, Jr.

Richard E. Dlynas

Blayne S. Selja

William E. Dwyer

[Signature]



West Virginia State Board of Registration  
for Professional Engineers

---

GERALD W LONGENECKER  
[REDACTED]

This is to certify that the above named PROFESSIONAL ENGINEER  
has met the requirements of the law, is duly registered and is  
entitled to practice engineering in the State of West Virginia.

EXPIRES JUNE 30, 2012

PROPOSED STAFFING PLAN



**Project Manager** - Rex Pepler, P.E., West Virginia Registered Professional Engineer

**AutoCAD** - Darryl L. White

**Mining Engineers** – Robert E. Golkosky, P.E., West Virginia Registered Professional Engineer and Terry Schmidt, P.E.

**Engineering Technician** – Holland Sturgill

**Environmental Engineer** – Gerald Longenecker, P.E., West Virginia Registered Professional Engineer

**Surveying** – Roy L. Balthis, Registered Land Surveyor

Other support staff as needed.



## Kelly's Creek Water Quality Assessment/AMD Remediation Project Kanawha County, West Virginia

### Client/Owner

Kelly's Creek Community  
Association

West Virginia Department of  
Transportation

### Estimated Project Value

Total: \$60,000  
Firm Responsibility: \$60,000

### Completion Date

2006

### Key Components

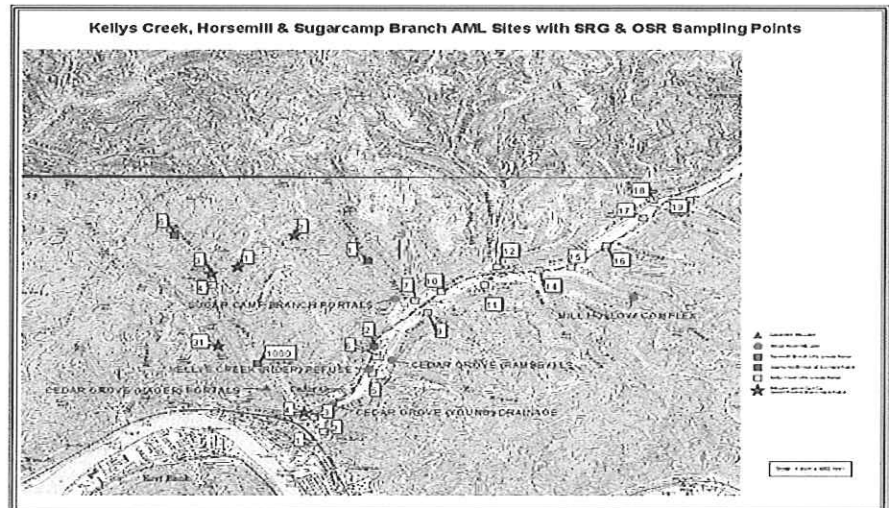
Watershed Assessment  
Conceptual Design; AMD

### Reference Contact

Mr. Terry Martin  
601 - 57th St.  
Charleston, WV 25304  
P: 304-826-0485

### Project Manager

Terry Schmidt, P.E.



Skelly and Loy, Inc. completed two projects for Kelly's Creek Communities Association (KCCA) involving the assessment of abandoned mine drainage (AMD) and the conceptual and final design of AMD remediation projects within the Sugarcamp Branch and Horsemill Branch tributaries of Kelly's Creek.

Kelly's Creek watershed is located southeast of Charleston along the Kanawha River north of Route 60 near the town of Glasgow, West Virginia. Skelly and Loy was initially hired by KCCA to provide environmental services to assess the water quality impacts caused by AMD within two sub-basins of the watershed. These services included reviewing water quality and macroinvertebrate data provided by the West Virginia Department of Environmental Protection, field investigations to collect site-specific data, water quality sampling and testing, and state and federal agency

coordination. Skelly and Loy provided KCCA with an assessment report that discussed the associated AMD impacts and conceptual AMD remediation options for the associated discharges.

Subsequent to the water quality assessment, KCCA hired Skelly and Loy to complete engineering and environmental services to remediate the AMD throughout the Sugarcamp Branch and Horsemill Branch sub-basins. These services included site investigations and measurements, aquatic resource investigations (wetland and stream), water quality sampling and testing, engineering design (including plans, cost estimation, and bid package preparation), state and federal agency coordination, and assistance in preparing the state and federal permits. Construction of several projects was completed in 2007.



## Abandoned Mine Drainage Remediation Project Valley Point #12 Preston County, West Virginia

### Client/Owner

Friends of Deckers Creek

### Estimated Project Value

Total: \$37,000

Firm Responsibility: \$34,000

### Completion Date

2008

### Key Components

Site Topographic Survey;  
Aquatic Resource Investigations;  
Water Quality Sampling and  
Testing; Engineering Design;  
State and Federal Agency  
Coordination

### Reference Contact

Mr. Martin Christ

P.O. Box 877

Dellslow, WV 26531-0877

P: 304-292-3970

### AMD Project Manager

Bradley Shultz, E.I.T.



The Valley Point #12 Abandoned Mine Drainage (AMD) Remediation Project is located outside of Kingwood, West Virginia on a headwater tributary to Kanes Creek, which is a named tributary to Deckers Creek. Skelly and Loy, Inc. was hired by Friends of Deckers Creek to provide engineering and environmental services to remediate the AMD from two discharges located at this site. These services included site topographic survey, aquatic resource investigations (wetland and stream), water quality sampling and testing, engineering design (including plans, cost estimation, and bid package preparation), state and federal agency coordination, and assistance in preparing the state and federal permits.

At this site, the two mine portals are discharging low flows that have a low pH, and high concentrations of acidity, iron, and aluminum. These discharges have eliminated aquatic life from portions of Kanes Creek.

The engineering design for this project calls for the collection of the discharges in a limestone leach bed for pre-treatment. This effluent is then moved down slope via a channel to a retention pond, prior to treatment in one or two sulfate-reducing bioreactors depending on the flow. From there, the effluent receives tertiary or polishing treatment in a second retention pond and aerobic wetland. Construction of this project was completed in spring 2008.

## North Fork Greens Run AMD Treatment Design Preston County, West Virginia

### Client

Friends of the Cheat

### Estimated Project Value

Total: \$12,500

Firm Responsibility: \$12,500

### Completion Date

December 2003

### Key Components

AMD Treatment Design;  
Construction Inspection

### Reference Contact

Mr. Keith Pitzer  
119 South Price Street  
Suite 206  
Kingwood, WV 26537  
P: 304-329-3621  
F: 304-329-3622

### AMD Project Manager

Terry Schmidt, P.E.



The North Fork Greens Run Abandoned Mine Drainage (AMD) Treatment Project is located outside of Kingwood, West Virginia, on a headwater tributary of North Fork of Greens Run near Dinkenberger Road. In 2003, Skelly and Loy assisted Friends of the Cheat by turning a conceptual design of the AMD treatment option prepared by the West Virginia University (WVU) - National Mine Land Reclamation Center into an engineering design and bid specifications package for construction. Skelly and Loy also provided construction inspection services for this project.

At this site, a mine portal is discharging a low flow AMD seep that has a low pH and is high in acidity, iron, and aluminum, that eventually flow into the tributary stream. As indicated in the

provided conceptual design by WVU National Mine Land Reclamation Center for the project, the discharge was collected in a small limestone leach bed on a hillside bench before being discharged into an 860-foot open limestone channel that parallels Dinkenberger Road until it eventually flows into North Fork of Greens Run.

Since construction of this remediation project, WVU and Friends of the Cheat have reported the following water quality improvements:

Parameter	Pre-Construction	Post-Const.
pH	2.7	3.2
Acidity	1,598 mg/l	549 mg/l
Fe	309 mg/l	65 mg/l
Al	104 mg/l	53 mg/l



## Virginia AML Pole Bridge Road Reclamation Project Wise County, Virginia

### Client/Owner

Virginia Department of Mines,  
Minerals, and Energy -  
Abandoned Mine Land Group

### Estimated Project Value

Total: \$50,000

### Completion Date

February 2013

### Key Components

Acid Mine Drainage; Impounded  
Mine Water; Site Drainage  
Control

### Reference Contact

Mr. Richard Davis  
Virginia DMME - AML Project  
Coordinator  
3405 Mountain Empire Road  
P.O. Drawer 900  
Big Stone Gap, VA 24219  
P: 276-523-8216

### Project Manager

Rex Pepler, P.E.



The Virginia Department of Abandoned Mine Lands selected Skelly and Loy, Inc. for this complicated project to eliminate a dangerous highwall; eliminate a dangerous impoundment of water within an abandoned mine; eliminate subsidence issues; reclaim an old mine spoils pile on-site; and establish drainage control which would include managing an acid mine drainage.

Skelly and Loy established an exploratory drilling program and offered a conceptual plan for completing all of the goals associated with the project.

The Pole Bridge Road site is situated immediately adjacent to a heavily traveled thoroughfare. Several residents in the area were complaining of subsidence problems, and traffic traveling the state-maintained road was subjected to a potentially dangerous highwall. This site had experienced a major blowout of mine discharge in the 1980s, and the present drainage was obviously acidic with very difficult drainage control issues.

Skelly and Loy personnel surveyed the site, selected an experienced drill team and worked closely with them during exploratory efforts, and evaluated all conditions related to the project objectives. We were able to recognize some potentially serious problems associated with the impounded mine water and to firmly establish pH control and drainage control in the area. Our team developed a conceptual plan and worked closely with the Virginia AML group to decide the best possible solution for managing water issues, highwall elimination, AMD, and surface drainage control.

After a thorough evaluation, Skelly and Loy and VAML personnel expect to conclude the design phase of this project by February 28, 2013. Skelly and Loy will enter the next phase by offering advice for the selection of an appropriately qualified contractor to finalize construction.

Virginia AML management and supervisory personnel are pleased with the services that Skelly and Loy has provided on this project.

## Red Ash Strip Mine and Gob Pile Reclamation Project Whitewood, Virginia

### Client/Owner

Circle L Land Company, LLC

### Estimated Project Value

Total: \$225,000

### Completion Date

January 2013

### Key Components

Stream Crossing; Drainage Control; Management of Mine Discharge

### Reference Contact

Mr. Tim Anders  
Circle L Land Company, LLC  
241 Circle T Drive  
Raven, VA 24639  
P: 276-345-1401

### Project Manager

Rex Peppler, P.E.



Circle L Land Company owns coal rights over an area known as Sugar Cove near Whitewood, Virginia. The site under permit was mined many years ago within the Jewell coal seam, and this project offers the mining company the opportunity to remine this high-quality coal seam. Skelly and Loy, Inc. has provided engineering services to Circle L Land Company to permit this site for remining and reclamation.

The Sugar Cove site is made up of steep terrain with an existing narrow bench. Several old gob piles were deposited on-site by more than one mining company prior to the 1977 SMCRA Act, and the first phase of this project permitted the reclamation of those piles. In fact, the mining company has been able, through our research and assistance, to reprocess a portion of the gob for sale as fossil fuel. Other inert materials have been managed appropriately in an approved spoils area.

A permit for remining of the Jewell coal seam is anticipated to be issued by the end of January 2013. Once that permit is approved, Circle L will immediately begin stripping this high-quality coal for the metallurgical market. The value of the coal on this relatively small site of about 80 acres is in the multi-millions of dollars, and there are several customers waiting in line to purchase the desirable product.

Skelly and Loy has provided assistance to our client along the way by

- evaluating coal reserves and coal quality;
- obtaining reference geologic information to reduce permit costs;
- establishing water sampling stations and parameters based on available data also reducing permit costs;





- developing technically innovative drainage control for the site, thereby offering plans which could be approved by the regulators;
- coordinating the entire approval process with the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, and other governing groups such that plans were readily accepted;
- offering expertise to develop a significant stream crossing based on extensive flow calculations; and
- delivering permittable plans and support information to regulatory agencies including DMLR, MSHA, and DEQ.

Skelly and Loy personnel further provided assistance to Circle L Land by offering sales and transportation contacts for development of the business side of the operation. We were able to provide necessary air quality permitting for a screening plant established on-site. Skelly and Loy team members delivered technical assistance through our own personnel and through our established relationships with other important members of the permit team, such as the water quality testing laboratory.

Circle L Land Company is extremely pleased with the permit package, and Skelly and Loy is proud to say that we delivered.





## Government Financed Construction Contract (GFCC) AML Reclamation Projects Clearfield County, Pennsylvania

### Client/Owner

R. H. Dotts Contracting, LLC

### Estimated Project Value

Firm Responsibility: \$15,340

### Completion Date

Ongoing

### Key Components

AML Reclamation; Permitting Services; Engineering Design

### Reference Contact

Mr. Joe Cusick  
5527 Glen Hope Boulevard  
Glen Hope, PA 16645  
P: 814-378-7802  
F: 814-672-4262



Skelly and Loy has performed engineering design and permitting services for R.H. Dotts Contracting, LLC for two GFCC projects located in Clearfield County, Pennsylvania. The two GFCC projects, located in Woodward Township, immediately outside of the Borough of Brisbin along State Route 153, involved reclamation and coal removal associated with abandoned underground mine complexes for the Upper Freeport coal seam. The shallow underground mine workings at the two adjacent sites, resulted in significant subsidence features on the two properties. Skelly and Loy was retained by R.H. Dotts Contracting in 2008 for the three acre Dunlap site to provide all of the necessary permitting and design information for submission as a GFCC project to the Pennsylvania Department of Environmental Protection Bureau of Mining and Reclamation (PA DEP BMR) Moshannon Office. Following PA DEP BMR approval of the GFCC application, R.H. Dotts Contracting, LLC performed the coal removal and reclamation work that was completed in 2010.

In 2011, R.H. Dotts Contracting, LLC retained Skelly and Loy to conduct the engineering design and permitting services for the five acre Machipongo site adjacent to the Dunlap project site. Upon development of the necessary engineering drawings using publicly available LIDAR mapping for the site, the GFCC application including all the necessary forms, drawings, and supporting information were submitted to PA DEP BMR Moshannon Office for review and comment. Skelly and Loy worked closely with the client to develop the responses to comments and upon final approval from PA DEP BMR, R.H. Dotts Contracting began the coal removal and reclamation activities at the site in July 2011. Reclamation work at the project site is expected to continue until early 2012. The results of the Machipongo and Dunlap GFCC projects will have reclaimed roughly eight acres of abandoned underground coal mines that had created significant subsidence features on the properties, which will allow for the safe future use of each site.



## Armstrong Energy Comment Letter to PA DEP Armstrong County, Pennsylvania

### Client

Tenaska, Inc.

### Estimated Project Value

Total: \$12,000

Firm Responsibility: \$12,000

### Completion Date

May 2008

### Key Components

Permit Review; Hydrogeologic  
Analysis; Subsidence Analysis

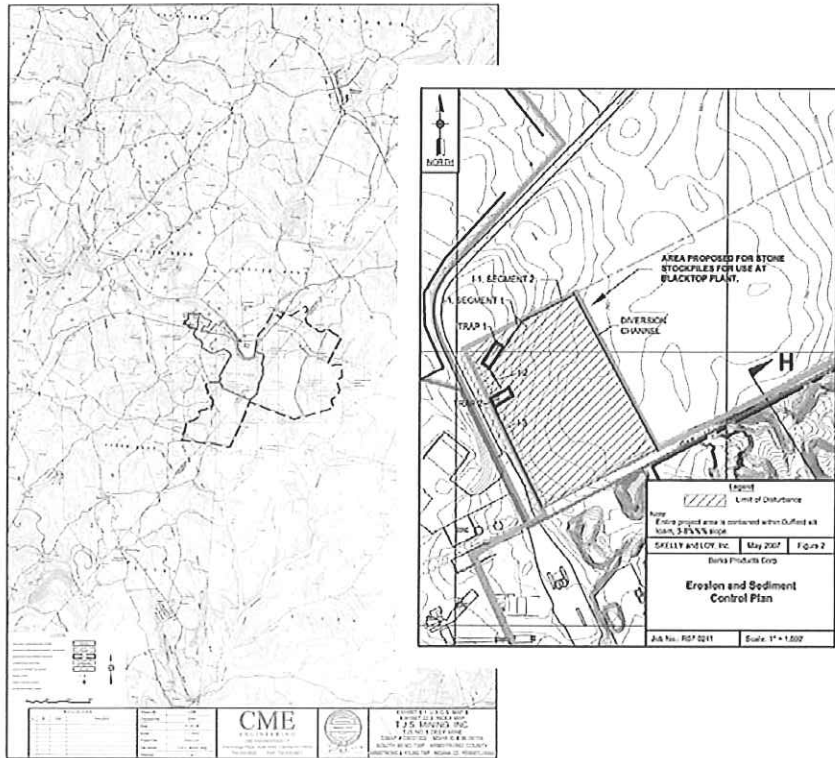
### Reference Contact

Mr. James D. Stallmeyer

P.O. Box 12259

Pittsburgh, PA 15231-0259

P: 860-693-1740



Skelly and Loy was engaged by Tenaska, Inc. to prepare a letter to convey to the Pennsylvania Department of Environmental Protection (PA DEP) comments and objectives that Armstrong Energy Limited Partnership, an affiliate company of Tenaska, had pertaining to a coal mine permit application. The nature of the concern is that Armstrong Energy operates a power plant overlying a portion of the proposed TJS Mining's No 5 Mine underground mine permit expansion area located near South Bend, Pennsylvania. Skelly and Loy concentrated its review on the adequacy of the evaluation completed by TJS Mining's consultant with regard to the impact of mining on the hydrology of the area and the potential for subsidence at the Armstrong facility.

The comment letter was prepared by Skelly and Loy based on our review of available published hydrogeologic data, the original mine permit, and revised permit information regarding the development of the proposed TJS Mining No. 5 Deep Mine. Skelly and Loy concluded that future deep mining operations may impact Armstrong's groundwater supplies. Skelly and Loy also recommended that a more detailed analysis of subsidence potential for the No. 5 Mine in the area of the Armstrong Power plant should be completed by TJS Mining. As a preferred alternative, Skelly and Loy suggested that the coal company maintain a mutually agreed upon mining setback from the plant area (such that the Armstrong Power Plant property is outside of the 35 degree angle of draw from the limit of mining) so that there could be no potential impact to the plant from subsidence.



## Comprehensive Engineering, Environmental, and Permitting Services Sequatchie Valley Coal Corporation, Sequatchie County, Tennessee

### Client

Sequatchie Valley Coal Corporation

### Project Value

Total: \$1,000,000  
Firm Responsibility: \$1,000,000

### Completion Date

Ongoing

### Key Components

Watershed Assessment; Land Management Plan; Acid Rock Drainage Remediation

### Reference Contact

Mr. Ken Milmine  
Cloud Peak Energy Resources  
P.O. Box 3009  
555 South Gillette Avenue  
Gillette, WY 82717  
P: 307-687-6028

### Project Manager

Terry Schmidt, P.E.



The Sequatchie Valley Coal Corporation (SVC) is a +1,000-acre surface coal mine operation located in Sequatchie and Van Buren Counties, Tennessee, in a physiographic area known as the Cumberland Plateau. Mining operations were initiated in 1982 under the ownership of the Nerco Coal Corp. In 1993, Nerco decided to close the mine as part of an effort to divest itself of eastern United States coal mining operations. SVC, along with other Nerco land holdings, was purchased in 1995 by Kennecott Energy, presently represented as Cloud Peak Energy Resources LLC (CPE). Reclamation activities were initiated in 1993 and are ongoing at the site. All backfilling, final grading, and seeding have been completed. Current reclamation activities deal primarily with mine drainage and water quality problems. Throughout this reclamation process since 1993, Skelly and Loy has continuously provided engineering and environmental support.

As part of the National Pollutant Discharge Elimination System (NPDES) permit discharge requirement for the property, Skelly and Loy (in conjunction with CPE) developed a watershed assessment and land management plan to address the acid rock drainage and water quality issues across the SVC property. Skelly and Loy designed and oversaw the construction of numerous acid rock drainage remediation measures across the SVC property within both the Dry Creek and Rocky River watersheds. The planning efforts have included a comprehensive evaluation of the water chemistry across the groundwater and surface waters regimes for the property in an effort to develop a strategic planned approach to remediating the water quality concerns for the SVC property. Remedial measures have included the installation of passive wetland treatment, limestone ponds, and anoxic limestone drains. Skelly and Loy designed





and provided construction oversight for dozens of these systems. Skelly and Loy's efforts have also included permit negotiations with Tennessee Department of Environment and Conservation (TDEC),

To assess the recovery of the receiving streams within the respective watersheds, Skelly and Loy completed an annual aquatic survey and water quality analysis of the Dry Creek and Rocky River watersheds as part of the SVC NPDES permit requirements. An extensive aquatic investigation was designed to determine baseline conditions of the Dry Creek watershed. The water quality of these streams had already been degraded by acid mine drainage from prior mining operations within the watershed. Typical annual sampling of Dry Creek watershed streams included 14 sites for populations of benthic macroinvertebrates, organisms which are sensitive to changes in habitat, water quality,

and sediment load and composition. Water samples were collected at 33 sites within the watershed and analyzed both in the field and in the laboratory for 14 different chemical parameters. Several of the streams were traversed to collect data at 27 sampling sites regarding the volume and velocity of stream flow and identification of point source discharge locations. The low flow and normal flow conditions were evaluated for all receiving streams within the scope of proposed SVC mining operations. The stream flow and water quality data were used in the determination of a loading analysis for receiving streams. The data obtained through the aquatic survey and the water quality evaluation, in comparison with historic data, are used in assess degradation of these streams and compare biological recovery associated with the ARD remediation efforts.





## Surface Mine Reclamation and Ash Management Service Rausch Creek Land, L.P., Schuylkill County, Pennsylvania

### Client/Owner

Rausch Creek Land, L.P.

### Estimated Project Value

Total: \$500,000

Firm Responsibility: \$500,000

### Completion Date

Ongoing

### Key Components

Reclamation of Surface Mines;  
Waste Characterization of Coal  
Ash; Permitting for Coal Ash  
Disposal; Regulatory Permitting  
and Negotiations

### Reference Contact

Mr. Matt Postupack  
978 Gap Street  
Valley View, PA 17983  
P: 570-682-4600

### Project Manager

Terry Schmidt, P.E.



Rausch Creek Land, L.P. owns surface, coal, and mineral rights over a large area in the western portion of Schuylkill County, Pennsylvania. The mining of anthracite coal has historically been performed throughout this region over the last 150 years. Areas that were mined prior to the Reclamation Act of 1977 were not reclaimed. For developing portions of its property, Skelly and Loy has provided services to Rausch Creek Land, L.P. to reclaim and restore a portion of these historical surface mined areas.

These reclamation services have included performing assessments to determine the total potential volume of ash storage/disposal areas within its property holdings. Skelly and Loy estimated that over ten million cubic yards of space is available for the storage/disposal of ash materials. This estimate accounted for the disposal of ash while maintaining the ability to meet the original topographical contour requirements and other regulatory reclamation obligations. In addition, Skelly and Loy also developed a list of potential ash storage areas, prioritizing prospective sites based on access, permitting, and water-handling challenges.

Skelly and Loy has also assisted Rausch Creek Land, L.P. with the preparation of permit modifications for the addition of new ash sources and a "request for determination" for innovative ash handling equipment associated with the beneficial use of ash. The permitting process included collecting samples of the ash and determining the physical and chemical characteristics of the materials. This information was used to determine the ash quality disposal requirements. Skelly and Loy also evaluated existing and potential ash generators and compared the quality of ash generated to new draft guidelines with particular emphasis on meeting the lower concentration limits for arsenic.

During an incident when ash was placed on a permitted area which did not meet beneficial use criteria, Skelly and Loy led the negotiations between the Pennsylvania Department of Environmental Protection, the permit holder, and the ash generator to resolve the outstanding compliance issues. As part of the negotiation process, Skelly and Loy prepared compliance plans to ensure that the ash fill materials would meet the ash quality placement requirements.



## Six Mile Run, Sandy Run, and Longs Run AMD Assessment and Remediation Plan Broad Top Township, Bedford County, Pennsylvania

### Client

Broad Top Township

### Estimated Project Value

Total: \$1,750,000

Firm Responsibility: \$300,000

### Completion Date

2004-2009

### Key Components

Growing Greener Grant;  
Abandoned Mine Design;  
Engineering Design; Permitting;  
Mine Seal Design

### Reference Contact

Mr. Ernest Fuller  
P.O. Box 57  
Defiance, PA 16633  
P: 814-928-5253

### Project Manager

Terry Schmidt, P.E.



For more than 20 years, Broad Top Township has worked to improve the quality of life for its citizens by addressing the negative environmental impacts related to abandoned mine land (AMLs) and abandoned mine drainages (AMD). In 2001, serving as the Township's environmental consulting firm, Skelly and Loy, Inc. completed an AMD assessment of the combined Six Mile Run and Sandy/Longs Run watersheds. The purpose of this evaluation was to update existing water quality information and establish a priority list for AMD remediation projects. The focus of this project was a year-long field survey and water quality sampling of the three watersheds to record flow and water quality parameters typical for AMD, ranging from net acidic with high iron and aluminum concentrations to net alkaline discharges containing elevated ferrous iron concentrations.

This investigation resulted in the identification of 80 discharges: 41 discharges located along Six Mile Run, 24 discharges along Sandy Run, and 15 discharges along Longs Run. The majority of these discharges are associated with abandoned underground coal mines, but some areas of abandoned or partially reclaimed surface mines have also resulted in AMD discharges within the watersheds. In addition, water

quality data indicated that cumulatively the monitored AMDs contribute a total of 63 tons per year of iron, 42 tons per year of aluminum, and 542 tons per year of acidity to the watersheds. Skelly and Loy estimated the cost for construction of passive treatment systems to remediate all the monitored AMDs at \$6,680,000 and that an additional \$4,000,000 would be needed for operation, maintenance, and replacement of the systems. Skelly and Loy developed a comprehensive remediation plan that identified passive treatment of 26 discharges and relocation of one discharge as top priorities in this 28-square-mile study area.

Skelly and Loy completed the design and supervised the construction of the high-priority remediation projects, entitled "Longs Run Regional AMD Remediation Project Phase 1 and 2." The engineering design details the specifications for the construction of 12 passive treatment systems to effectively abate 13 discharges. This elaborate set of passive treatment systems restored nearly the entire main stem or approximately 5.25 miles of Longs Run.

Within the Six Mile Run watershed, Skelly and Loy completed the engineering design and performed



construction oversight of 9 passive AMD treatment systems to remediate 13 AMD discharges. These constructed passive treatment systems have helped to restore approximately three miles of Six Mile Run and an entire tributary known as Shreves Run.

The components of these 21 passive treatment systems included channel modifications to reroute discharges and/or stormwater, mine seals within exposed mine entries, limestone and settling ponds to impart alkalinity and capture the precipitated heavy metals, dosing siphons, inline and inlet control structures to completely drain the ponds for removal of the metal precipitates and sludge, and aerobic wetlands for tertiary treatment. Due to the presence of aluminum in most of the discharges, innovative flushing technologies were incorporated into the design for many of the passive treatment systems to manage the accumulation of metal precipitates in the limestone void spaces.

In completing the designs, Skelly and Loy's engineering team completed surveying and mapping, conceptual engineering design, erosion and sediment control planning, and permits. These professionals determined limestone pond, vertical flow wetland, aerobic wetland, and settling pond configurations; specified pond and wetland berm heights, types, and outlet structures; calculated storage volumes; estimated retention times and surface areas; and detailed grading of topographic features. Skelly and Loy computed expected treatment conditions, sludge accumulation volumes, and clean-out methods.

All construction work was completed by Broad Top Township personnel with Skelly and Loy

providing construction oversight and final design as-builts. Throughout the design and construction process, Skelly and Loy as the engineering design firm and Broad Top Township as the construction entity worked closely together to achieve the individual objective at each AMD discharge site and to complete each project within the funding budget.

These individual projects were part of the larger Broad Top Township/Coaldale Borough Wastewater Management and Environmental Restoration Program, which is working to solve problems associated with non-point pollution throughout the two municipalities, especially abandoned mine drainage and failing on-lot sewer systems. Partnership cooperation and stakeholder communication have been essential elements of the continued success of this large-scale ecosystem restoration program. Skelly and Loy worked closely on these projects with the Broad Top Township Supervisors, Penn State University Environmental Resources Research Institute, Pennsylvania Department of Environmental Protection Bureau of District Mining Operations, Bedford County Conservation District, Western Pennsylvania Coalition for Abandoned Mine Reclamation, and Bedford County Planning Commission.





## Blackleggs Creek Watershed Acid Mine Drainage Remediation Projects Indiana County, Pennsylvania

### Client

Blackleggs Creek Watershed  
Association

### Estimated Project Value

Total: \$2,000,000  
Firm Responsibility: \$300,000

### Completion Date

2005-Present

### Key Components

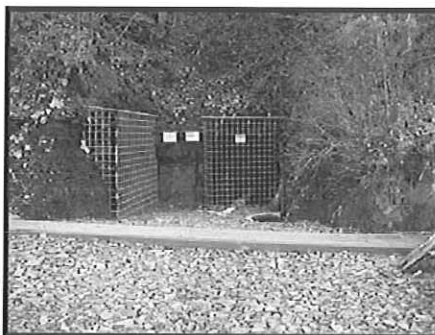
AMD Treatment System;  
Engineering Design; Permitting;  
Mine Seal Design; Abandoned  
Mine Reclamation

### Reference Contact

Mr. Art Grguric  
P.O. Box 59  
Clarksburg, PA 15725-0059  
P: 724-639-9572

### Project Manager

Terry Schmidt, P.E.



In 2001, the Blackleggs Creek Watershed Association (BCWA) received funding from Pennsylvania's Growing Greener Grant and Section 319 programs to design and construct three passive and one semi-active abandoned mine drainage (AMD) treatment systems to address the iron, aluminum, and acidity loading of the Big Run #2, #3, #7, and #8 discharges into Big Run, a tributary to Blackleggs Creek. Upon receiving the funding for each individual project, Skelly and Loy, Inc. was contracted by BCWA to complete the engineering design and permitting of the treatment systems. The ultimate goal of the watershed restoration efforts is to restore Blackleggs Creek watershed to a put-and-take trout fishery through the remediation of these high flow AMD discharges.

The goal of the Big Run #2 project was to construct and operate a passive AMD treatment system to reduce the aluminum and acidity loads while adding some excess alkalinity into Big Run and ultimately Blackleggs Creek. The Big Run #2 discharge originates from a deep mine drainage heading along Big Run in Conemaugh Township, Indiana County. While the water chemistry, specifically the aluminum and acidity concentrations, are not severe, the average flow rate of the discharge is 1,250 gallons per minute (gpm), which translates to 252 tons of acidity and 42 tons of aluminum



discharge entering Blackleggs Creek annually.

The Big Run #2 passive treatment system includes a piping network to direct the discharge from a deep mine drainage heading underneath Big Run and to the treatment location, which includes an oxic limestone pond containing 3,400 tons of limestone and a settling pond/wetland which includes inline water control structures to adjust the surface water elevations in the limestone bed and wetland. The limestone pond inline structure is also used to manually flush metal precipitates from the void spaces of the limestone. In addition, BCWA with the help of Skelly and Loy submitted a Growing Greener Grant in 2005 for additional limestone due to the increase in average flow rates for the discharge. The grant was awarded and BCWA added the additional limestone to the pond in 2006.

The Big Run #7 passive treatment system targeted an AMD discharge from an exposed underground mine entry, with average flows of 800 gpm and moderate concentrations of aluminum and acidity. A passive treatment system design was completed that utilized a 4,000-ton oxic limestone pond and settling pond to fit in the site constraints. A wet mine seal was designed and



installed at the exposed mine entry to either direct the AMD into the limestone pond or into a diversion channel that bypasses the system. The limestone pond incorporates inline structures for the purpose of manually flushing the aluminum precipitates from the void spaces of the limestone. Prior to completion of the Big Run #7 AMD passive treatment system in 2006, the discharge contributed approximately 275 tons of acidity and 26 tons of aluminum annually to Big Run/Blacklegs Creek.

The Big Run #8 AMD discharge was the most complex and difficult to remediate due to the drainage heading that was installed by blasting approximately 1,000 feet horizontally through bedrock from Big Run into a low point in the underground mine complex for dewatering. A mine seal and control valve were designed and installed at a reduction point in the drainage heading from the mine in order to hydraulically control outflow from the underground mine complex. This mine seal allowed raising the mine pool elevation over 20 feet to discharge the AMD into a passive AMD treatment system that included two 2,400-ton limestone ponds and one settling pond. Due to the significant increase in the mine pool elevation, AMD discharged from an adjacent mine entry location. This mine entry was stabilized and sealed with a hydraulic outlet pipe that conveyed the AMD and bypassed the Big Run #8 treatment system. In addition to the design and construction of the limestone-based passive treatment system, the existing highwall feature at the site that resulted from the incidental coal removal as part of the project was filled with the excavated material from the Big Run #8 treatment system and stabilized. The system and site improvements were completed in 2009-2010. The Big Run #8 AMD was characterized as net acidic with high aluminum and moderate to high iron and acidity concentrations and an average flow of approximately

1,000 gpm. Annually, the Big Run #8 raw AMD discharge contributes approximately 57 tons of aluminum, 33 tons of iron, and 584 tons of acidity.

Because of the high aluminum loading rates for each AMD discharge into the constructed limestone-based passive treatment systems, inline structures and perforated piping networks with the limestone beds were designed and installed to manually flush the metal precipitates from the void spaces periodically by BCWA personnel. Inlet structures were installed for most of the settling ponds to allow control of the retention time for maximum treatment efficiency and dewatering of the basin for maintenance purposes such as sludge removal.

The Big Run #3 AMD discharge was not capable of treatment due to location, which required the addition of excess alkalinity to an existing treatment system outfall for in-stream remediation of the untreated discharge. A semi-active alkaline chemical feed system was designed and constructed in 2010 using the outfalls from the Big Run #7 and #8 passive treatment systems. Hydrated lime will be added to the two system outfalls using a hydraulically driven tipping bucket dispensing mechanism with a 30-ton silo storage unit. This alkaline chemical addition is expected to provide final polishing to the two passive system outfalls, which can average approximately 1,800 gpm combined, and impart excess alkalinity into Big Run and ultimately Blacklegs Creek. A rock-lined mixing channel, settling pond, aerobic wetland, and sludge dewatering pond were the additional major components of the treatment system, which will be maintained by BCWA. The treatment system construction will be completed and operation initiated in 2011.





## Boyce Park Acid Mine Drainage Remediation Project Allegheny County, Pennsylvania

### Client/Owner

Jeff Zell Consultants, Inc.

Allegheny County Department of  
Public Works

### Estimated Project Value

Total: \$18,500

### Completion Date

2007

### Key Components

AMD Passive Treatment System  
Design

### Reference Contact

Mr. Louis Obradovich  
Jeff Zell Consultants, Inc.  
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Coraopolis, PA 15108  
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### Project Manager

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Severe Acid Mine Drainage (AMD) enters Piersons Run located within the Allegheny County portion of the Turtle Creek watershed and Abers Creek, both of which are classified as trout-stocked fisheries. Skelly and Loy, Inc. assisted in the preparation of a Growing Greener Grant subsequently awarded to the Allegheny County Conservation District (ACCD) for the design and construction of passive treatment systems at these high-priority AMD discharges at one central site within the county/regional park known as Boyce Park. The AMD discharges lower the naturally low pH and produce elevated dissolved metals concentrations in the receiving streams.

ACCD selected Skelly and Loy to design the passive treatment system(s) for an estimated 20- to 25-year life and to supervise their construction in 2007. Based on water quality and flow data and site surveys prepared by Skelly and Loy, AMD design experts evaluated alternatives for treating and routing

the three AMD discharges. One elaborate passive treatment system was proposed and constructed for treating all three of the discharges due to the close proximity of the discharges and the county park-imposed site constraints. All three discharges were treated separately using independent limestone-based treatment ponds but were combined in the final polishing wetland to create one final treated discharge from the site. The treatment systems included limestone ponds, vertical flow wetlands, settling ponds, and wetlands. The design for the passive treatment system(s) included the determination of the configurations of limestone/VFW and settling ponds for routing and treating the discharges based on site topography and the characteristics of each discharge.

### TREATMENT SYSTEMS

ACCD received Growing Greener Grant funding for the design and construction of passive treatment





systems at these three high-priority AMD discharges within Boyce Park. Skelly and Loy, Inc., the selected AMD consultant, designed the passive treatment systems for an estimated 20- to 25-year life and assisted with the supervision of their construction. Based on water quality data and flow data provided by TCWA and from the site surveys conducted by Skelly and Loy, Skelly and Loy evaluated alternatives for treating and routing the three AMD discharges at the site. One extensive treatment system was proposed and constructed for treating all three discharges due to the close proximity and available land at the site. The design for each component of the passive treatment system for the three discharges included the determination of the configurations of limestone/VFW and settling ponds and a final polishing wetland.

In the limestone pond used for treating the BP2 discharge, the AMD passes through the high calcium carbonate limestone (typically greater than 80% CaCO<sub>3</sub>) and dissolves the limestone to impart alkalinity and neutralize acidity. Similarly, in the VFWs for BP3 and BP4, a layer of compost material is placed on top of a limestone bed to help to control the precipitation and coating of iron within the limestone bed and to

enhance the limestone dissolution by trapping carbon dioxide. The net alkaline water is then routed out of the limestone bed via piping networks at the bottom of the ponds and through settling or retention ponds for precipitation of the metals, primarily iron and aluminum. Skelly and Loy designed both manual flushing systems and automatic dosing siphons to aid in the removal of aluminum and iron precipitates from the void spaces in the limestone ponds and VFWs. Finally, the water from all three discharges is combined in a final polishing wetland before discharge to an existing wetland area in the headwaters of Piersons Run. Before their treatment, the individual AMD discharges were characterized as follows in Figure 1.

After construction of the passive treatment systems, the quality was dramatically improved. Flows remained fairly consistent and the typical combined final effluent quality is provided below in Figure 2.

Skelly and Loy was subsequently retained by the Allegheny County Department of Public Works to perform operation and maintenance checks and to ensure that all systems continue to function as designed.

**FIGURE 1: BOYCE PARK RAW AMD DISCHARGES CHARACTERIZATION**

SITE	FLOW (GPM)	PH (SU)	ALKALINITY (MG/L)	ACIDITY (MG/L)	TOTAL IRON (MG/L)	TOTAL ALUMINUM (MG/L)	TOTAL MANGANESE (MG/L)
BP2	19	4.6	12.4	55.8	0.48	13.4	0.29
BP3	29	3.3	0.0	257.0	5.0	25.3	0.7
BP4	7	3.5	1.7	467.5	15.0	71.9	1.7

**FIGURE 2: BOYCE PARK SYSTEM FINAL OUTFALL**

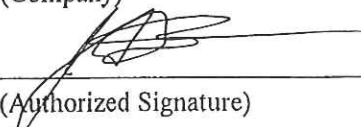
SITE	PH (SU)	ALKALINITY (MG/L)	ACIDITY (MG/L)	TOTAL IRON (MC/L)	TOTAL ALUMINUM (MG/L)	TOTAL MANGANESE (MC/L)
ALL	8	82	-70	0.06	<0.05	0.16

**CERTIFICATION AND SIGNATURE PAGE**

By signing below, I certify that I have reviewed this Solicitation in its entirety; understand the requirements, terms and conditions, and other information contained herein; that I am submitting this bid or proposal for review and consideration; that I am authorized by the bidder to execute this bid or any documents related thereto on bidder's behalf; that I am authorized to bind the bidder in a contractual relationship; and that to the best of my knowledge, the bidder has properly registered with any State agency that may require registration.

Skelly and Loy, Inc.

(Company)

  
 (Authorized Signature)

James T. France, Chief Financial Officer

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January 21, 2013

(Date)