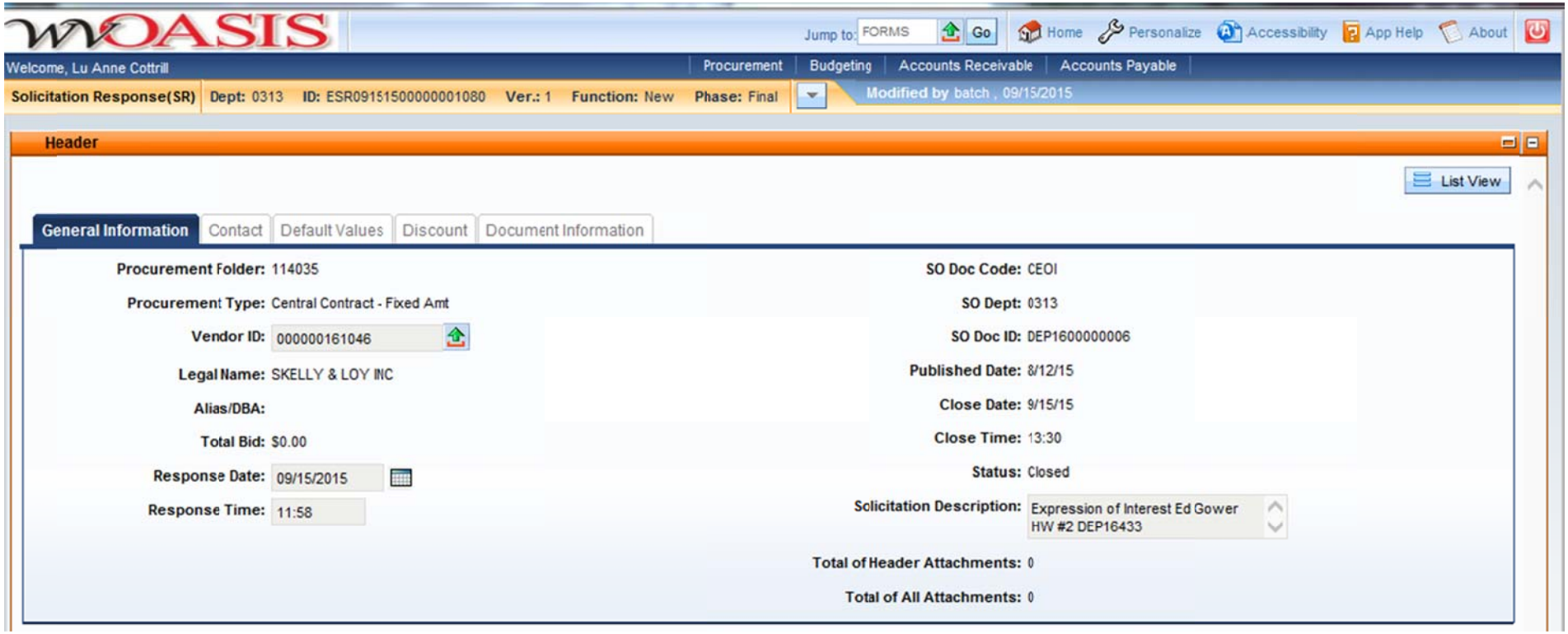
The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at ***wvOASIS.gov***. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at ***WVPurchasing.gov*** with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.


WVOASIS
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Procurement
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Solicitation Response(SR) Dept: 0313 ID: ESR09151500000001080 Ver.: 1 Function: New Phase: Final
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Header
List View
General Information
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Document Information
Procurement Folder: 114035
Procurement Type: Central Contract - Fixed Amt
Vendor ID: 000000161046
Legal Name: SKELLY & LOY INC
Alias/DBA:
Total Bid: $0.00
Response Date: 09/15/2015
Response Time: 11:58
SO Doc Code: CEOI
SO Dept: 0313
SO Doc ID: DEP1600000006
Published Date: 8/12/15
Close Date: 9/15/15
Close Time: 13:30
Status: Closed
Solicitation Description: Expression of Interest Ed Gower HW #2 DEP16433
Total of Header Attachments: 0
Total of All Attachments: 0

Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Solicitation Response

Proc Folder : 114035

Solicitation Description : Expression of Interest Ed Gower HW #2 DEP16433

Proc Type : Central Contract - Fixed Amt

Date issued	Solicitation Closes	Solicitation No	Version
	2015-09-15 13:30:00	SR 0313 ESR09151500000001080	1

VENDOR

000000161046

SKELLY & LOY INC

FOR INFORMATION CONTACT THE BUYER

Beth Collins

(304) 558-2157
beth.a.collins@wv.gov

Signature X **FEIN #** **DATE**

All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	EOI Engineering Design Services				

Comm Code	Manufacturer	Specification	Model #
81100000			

Extended Description : *Dates of Service are estimated for bidding purposes only.

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AML CONSULTANT QUALIFICATION QUESTIONNAIRE **Attachment "B"**

PROJECT NAME	DATE (DAY, MONTH, YEAR)	FEIN
Expression of Interest Ed Gower HW #2 DEP16433	15, 9, 15	25-1645583

1. FIRM NAME	2. HOME OFFICE BUSINESS ADDRESS	3. FORMER FIRM NAME
Skelly and Loy, Inc.	449 Eisenhower Boulvard, Suite 300, Harrisburg, PA 17111	

4. HOME OFFICE TELEPHONE	5. ESTABLISHED (YEAR)	6. TYPE OWNERSHIP	6a. WV REGISTERED DBE (Disadvantaged Business Enterprise)
717-232-0593	1969	Individual X Corporation Partnership Joint-Venture	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
240 Scott Avenue Morgantown, WV 26508	304-296-6500 FAX 304-381-4197	Gerald W. Longenecker,P.E.	5

8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM
8a. NAME, TITLE, & 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

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

0 ADMINISTRATIVE (20) 0 ARCHITECTS (0) 0 BIOLOGIST (11) 1 CADD OPERATORS (9) 0 CHEMICAL ENGINEERS (0) 1 CIVIL ENGINEERS (9) 1 CONSTRUCTION INSPECTORS (3) 0 DESIGNERS(5) — DRAFTSMEN (0)	0 ECOLOGISTS (0) — ECONOMISTS (0) 0 ELECTRICAL ENGINEERS (0) 0 ENVIRONMENTALISTS (41) 0 ESTIMATORS (0) 1 GEOLOGISTS (5) 0 HISTORIANS (10) 0 HYDROLOGISTS (5)	0 LANDSCAPE ARCHITECTS (2) 0 MECHANICAL ENGINEERS (0) 1 MINING ENGINEERS (1) — PHOTOGRAMMETRISTS (0) 0 PLANNERS:URBAN/REGIONAL (1) — SANITARY ENGINEERS (0) 0 SOILS ENGINEERS (1) 0 SPECIFICATION WRITERS (1)	0 STRUCTURAL ENGINEERS (2) 0 SURVEYORS (1) 0 TRAFFIC ENGINEERS (0) 0 OTHER (20) 5 TOTAL PERSONNEL (147)

TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE: 1
***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

11. OUTSIDE KEY CONSULTANTS/SUB-CONSULTANTS ANTICIPATED TO BE USED. Attach “AML Consultant Qualification Questionnaire”.

		WORKED WITH BEFORE _____ Yes _____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE __ ___ Yes _____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE _____ Yes _____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE _____ Yes _____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE _____ Yes _____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE _____ Yes _____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE _____ Yes _____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE _____ Yes _____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH 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 both projects

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 Historically Skelly and Loy subcontracted, these services however, in August we have received Section 333 exemption from the FAA that allows Skelly and Loy to operate a small unmanned aircraft system (UAS) for purposes of performing site topographic surveys using a Trimble UX5 system.

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 mmining 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 maintentance 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		
John W. Gunnett, P.E., President and Chief Operating Officer	YEARS OF AML DESIGN EXPERIENCE: 20	YEARS OF AML RELATED DESIGN EXPERIENCE: 20	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 0

Brief Explanation of Responsibilities
Principal of Skelly and Loy, QA/QC. Involved with Operation Scarlift, oversight and involvement over history or the firm.

EDUCATION (Degree, Year, Specialization)
B.S., 1971, Geology
M.S., 1974, Mining Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
Pennsylvania Coal Alliance Society of Mining Engineers	Professional Geologist, 1993, Kentucky Professional Geologist, 1994, Pennsylvania

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		
Donald W. Polly, EIT, Associate, Vice President, Technical Services	YEARS OF AML DESIGN EXPERIENCE: 35	YEARS OF AML RELATED DESIGN EXPERIENCE: 35	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 0

Brief Explanation of Responsibilities
Associate of Skelly and Loy, Assistance with mine reclamation plans. Involved with Operation Scarlift, oversight and involvement over history of the firm and continuing through current day involvement in designing mine reclamation plans.

EDUCATION (Degree, Year, Specialization)
Certificate, 1966, Accounting
Certifcate, 1968, Civil Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
	EIT, 1972, Pennsylvania

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		
Gerald W. Longenecker, P.E., Associate, Vice President, Engineering Services	YEARS OF AML DESIGN EXPERIENCE: 5	YEARS OF AML RELATED DESIGN EXPERIENCE: 20	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 5
Brief Explanation of Responsibilities Senior Manager and Associate of Skelly and Loy. Provide project management and direction of mine reclamation projects throughout 22 year tenure with the firm. Currently manages technical staff involved in AML-related worke			
EDUCATION (Degree, Year, Specialization) B.S., 1979, Agricultural Engineering M.S., 1980, Agricultural Engineering			
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State) Professional Engineer, 2010, West Virginia Professional Engineer, 1997, Maryland Professional Engineer, 1985, Pennsylvania Professional Engineer, 1988, Delaware Professional Engineer, 1986, NJ Professional Engineer, 1988, NC		

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, Carlson, ArcGIS, PHREEQC. 'R' STATISTICAL, Hydroflow

Survey Equipment:
TOPCOM S-6 Robotic Total Station, 1 ea.
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.

Other Equipment:
Hanna 9828 Geochemical Field Meter
Marsh McBirney/USGS Wading Rod Flow Meter
Solens Level SenSors - 5 data logger
Solens Baro loggers - 1
Well Tape
pH Meter
Water Quality Multi-meter
Well Pump

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
Alpha Natural Resources Environmental Audits	Alpha Natural Resources, One Alpha Place, P.O. Box 16429, Bristol, VA 24209	Environmental compliance audits. Verify conformation to EPA, DEP, SMCRA regulations.	$265,808 (fees)	73%
Kolb Polishing Wetland Passive AMD Treatment System	Blackleggs Creek Wateshed Association, P.O. Box 59, Clarksburg, PA 15725	Comprehensive engineering design, bid packages, permitting services, construction oversight.	$29,500 (fees)	80%
Brinkerton Phase II Passive AMD Treatment System	Western Pennsylvania Conservancy, 1067 Philadelphia Street, Suite 101, Indiana, PA 15701	Comprehensive engineering design, bid packages, permitting services, construction oversight.	$35,000 (fees)	80%
Broadtop Township Passive AMD Treatment Systems	Broad Top Township, 187 Municipal Road, Defiance, PA 16633	Comprehensive engineering design, bid packages, permitting services, construction oversight.	$189,500 (fees)	77%
Brubaker Run Active Calcium Oxide AMD Treatment Sytem	Clearfield Creek Watershed Association, 216 Beldin Road, Ashville, PA 16613	Comprehensive engineering design, bid packages, permitting services, construction oversight.	$30,000 (fees)	10%
Buck Mountain 2 Passive AMD Treatment System Evaluation and Recommendations Report	Trout Unlimited, 18 East Main Street, Suite 3, Lock Haven, PA 17745	Evaluation and recommendations for passive AMD treatment sytem.	$5,000 (fees)	50%
Future Power, Susquehanna River Basin Commission Permitting Studies	Future Power PA LLC, 72 Glenmaura Drive, Suite 105, Mosaic, PA 18507	High capacity pump testing with associated surface water, groundwater, and mine pool monitoring. Comprehensive	$8,838 (currently billed)	80%

		permitting.		
FODC Sandy Run Passive AMD Remediation Project	Friends of Deckers Creek, P.O. Box 877, Dellslow, WV 26531	Comprehensive engineering design, bid packages, permitting services, construction oversight.	$26,075 (fees)	90%
Lausanne Tunnel AMD Passive Treatment System	Pennsylvania Wildlands Conservancy, 3701 Orchid Place, Emmaus, PA 18049	Evaluation and recommendations for passive AMD treatment sytem.	$3,745 (fees)	95%
Sequatchie Valley Coal Active AMD Treatment Systems and AMD Generation Research Study	Cloudpeak Energy Resources LLC, P.O. Box 3009, Gillette, WY 82717	Comprehensive engineering design, bid packages, permitting services, construction oversight. Research methods to abate production of AMD.	$1,449,434 (fees)	35%
Site 42 Passvie AMD Treatment System	Northumberland County Conservation District, 441 Plum Creek Road, Sunbury, PA 17801	Comprehensive engineering design, bid packages, permitting services, construction oversight.	$10,000 (fees)	80%
Spruell Passive AMD Treatment System	Western Pennsylvania Conservancy, 1067 Philadelphia Street, Suite 101, Indiana, PA 15701	Comprehensive engineering design, bid packages, permitting services, construction oversight.	$33,500 (fees)	80%
Rausch Creek Land Engineering Support for Mine Reclamation, AMD treatment facilities	Rausch Creek Land 978 Gap Street Valley View, Pa 17983	Comprehensive Engineering, Environmental, and Permitting Services	$1,000,000 (Fees)	60%

Hagerman's Run 2 Permit Application, Williamsport, Lycoming County, Pennsyvania	Glenn O. Hawbaker 1952 Waddle Road, Suite 203 State College, PA 16803-1649	Comprehensive Engineering and Environmental Design, Mining, and Reclamation Planning associated with the submission to secure large non-coal mining permits	$177,000 (Fees)	93%
Gentzel Permit Application(Graymont, Bellefonte, PA	Glenn O. Hawbaker 1952 Waddle Road, Suite 203 State College, PA 16803-1649	Comprehensive Engineering and Environmental Design, Mining, and Reclamation Planning associated with the submission to secure large non-coal mining permits	$73,000 (Fees)	90%
Fairborn/Xenia 3250 Linebaugh Road, Xenia, OH	CEMEX 3250 Linebaugh Road, Xenia, OH	Comprehensive Engineering and Environmental Design, Mining, and Reclamation Planning associated with the submission to secure large non-coal mining permits	$44,000 (Fees)	90%
GOH/BCC Mammoth Project	GOH/BCC 1952 Waddle Road, Suite 203 State College, PA 16803-1649	Comprehensive Engineering and Environmental Design, Mining, and Reclamation Planning associated with the submission to secure large non-coal mining permits	$90,000 (Fees)	95%
Tressler Permit Application, Bellefonte, PA	Glenn O. Hawbaker 1952 Waddle Road, Suite 203 State College, PA 16803-1649	Comprehensive Engineering and Environmental Design, Mining, and Reclamation Planning associated with the submission to secure large non-coal mining permits	$93,000 (Fees)	95%

Egypt Quarry - Reclamation Plan	Lafarge Corporation 300 East Jopp 21286a Road, Suite 200 Towson, MD	Detailed reclamation plans including quantity calculations and construction specificatios for final reclamation at large non-coal mine sites	$10,000 (Fees)	90%
Strongstown Site	Rosebud Mining Company RD #9 Box 379A Kittanning, PA 16201	Comprehensive Engineering and Environmental Design, Mining, and Reclamation Planning associated with the submission to secure large non-coal mining permits	$80,000 (Fees)	95%
Rehabilitation/Reclamation Plans for Northampton/Dragon Quarry Sites, Northampton, PA	Lafarge Corporation 300 East Jopp 21286a Road, Suite 200 Towson, MD	Detailed reclamation plans including quantity calculations and construction specificatios for final reclamation at large non-coal mine sites	$10,000 (Fees)	90%
Harleysville Permitting and Mine Planning	Harleysville Materials LLC	Comprehensive Engineering and Environmental Design, Mining, and Reclamation Planning associated with the submission to secure large non-coal mining permits	$20,000 (Fees)	95%
Ontelaunee New Permit Berks County, Pennsylvania	Berks Products 167 Berks Products Drive Leesport, PA 19533	Comprehensive Engineering and Environmental Design, Mining, and Reclamation Planning associated with the submission to secure large non-coal mining permits	$50,000 (Fees)	90%

G.S. Smith Consent Order of Compliance Activities. Pennsylvanis	Rausch Creek Land 978 Gap Street Valley View, PA 17983	Detailed engineering mine and reclamation plans including material quantities for large non-coal mine sites	$20,000 (Fees)	73%
Rohrer's Quarry Assistance Lititz, Pennsylvanis	Rohrer’s Quarry, Inc. 70 Lititz Road Lititz, PA 17543-0365	Comprehensive Engineering and Environmental Design, Mining, and Reclamation Planning associated with the submission to secure large non-coal mining permits	$25,000 (Fees)	90%
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., Schuykill 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

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 2nd 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: 43		TOTAL ESTIMATED CONSTRUCTION COSTS: $43,253,500 (**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
S.R. 0031-179 at Donegal Exit, Westmoreland County, PA	Environmental Studies/Documentation	PENNDOT District 12-0 P.O. Box 459 825 North Gallatin Avenue Ext., Uniontown, PA	2015 NA		$190,000 (fee)
Reconstruction of PA Turnpike Mainline – MP T57 to T67, Allegheny and Westmoreland	Environmental Studies	PA Turnpike Commission P.O. Box 67676 Harrisburg, PA 17106-7676	2016 NA		$370,000 (fee)
Reconstruction of PA Turnpike Mainline – MP T49 to T53, Westmoreland	Environmental Studies	PA Turnpike Commission P.O. Box 67676 Harrisburg, PA 17106-7676	2016 NA		$433,000 (fee)
SR 0322 PMG, Centre County, PA	Cultural Resource Studies	PENNDOT District 2-0 70 PennDOT Drive Clearfield, PA 16830	2015 NA		$148,000 (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	2015 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	2015 NA		$550,000 (fee)
Greene County Bridge No. 15, Greene County, PA	Environmental Studies/Documentation	Greene County Board of Commissioners 93 E. High Street Waynesburg, PA	2015 NA		$59,000 (fee)

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
Coalfields Expressway, Raleigh and Wyoming Counties, WV	Section 404/401 Permit	WV Division of Highways State Capitol Complex 1900 Kanawha Blvd.,	2015	NA $372,000	(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/Documentation/ Final Design	PENNDOT District 12-0 P.O. Box 459 825 North Gallatin Avenue Ext.,	2016 NA		$344,000 (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)
Sovern-Titchenell AMD, Treatment System Design, Plans, Permitting, Bid Documents, and Construction Inspection, Preston County, WV	Friends of the Cheat, 119 South Price Street, Kingwood, WV 26537	$200,000 (Construction) $30,000 (fees)	2014	Yes
PASE AMD Remediation Project, Plans, Permitting, Bid Documents, and Construction Inspection, Preston County, WV	Friends of the Cheat, 119 South Price Street, Kingwood, WV 26537	$27,700 (fees)	2013	Yes
Sandy Run AMD Treatment System Design, Plans, Permitting, Bid Documents, and Construction Inspection, Preston County, WV	Friends of Deckers Creek, PO Box 877, Dellslow, WV 26531	$535,000 (Construction) $26,000 (fees)	2012	Yes
KCSS #3 AMD Treatment System Design, Plans, Permitting, Bid Documents, and Construction Inspection, Preston County, WV	Friends of Deckers Creek, PO Box 877, Dellslow, WV 26531	$135,000 (Construction) $36,500 (fees)	2014	Yes
Multiple AMD Treatment System Designs, Plans, Permitting, Construction Inspection, Final Reports, and OM&R Reports, Bedford County, PA	Broad Top Township, 187 Municipal Road, Defiance, PA 16633	$128,900 (fees)	2010-2015	Yes
Keysers Ridge, Acid Rock Mitagation Project for MDSHA, I-68 Garrett County, Maryland	Maryland Department of State Highways 707 North Calvert Street Baltimore, Maryland 21202	$1,000,000 2011		Yes
Boyce Park AMD Treatment System Design, Plans, Permitting, Bid Documents, Construction Inspection, O&M Reports, and Water Sampling, Allegheny County, PA	Allegheny County Department of Public Works, 501 County Office Building, 542 Forbes Avenue, Pittsburgh, PA 15219	$100,000 (fees)	2010-2012	Yes

Sequatchie Valley Coal Active and Passive AMD Treatment Facilities Dunlap Tennesee	Cloud Peak PO Box 3001 Gillette, Wyoming 82717	$2,000,000 (fees)	2010-2014	Yes
Blacklegs Creek AMD Treatment Facilities Indiana County, Pa	Black Leggs Watershed Associtation P.O. Box 59 Clarksburg, Pa 15725	$150,000 (fees)	2010-2014	Yes
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	$160,000 (fees)	2013	N
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	$65,000 (fees)	2015 N	
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	$120,000 (fee)	2013 N	
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	$50,000 (fees)	2013	N

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	$160,000 (fees)	2013	N
Progress Energy Government Imposition Claim, IN	Progress Energy 410 S. Wilimington Street Raleigh, NC 27601	$47,000 2014		N
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
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
Investigations of Solar Mine Costs, IN	Hoosier Energy REC, Inc. 7398 North State Road 37 Bloomington, IN 47304	$9,000 2011		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
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

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, 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
Statewide Open-End Archaeological, DE (2007) (Agreement 1418)	Delaware Department of Transportation 800 Bay Road Dover, DE 19903	NA 2010		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
PA Turnpike Commission Open-End Contract Environmental Services, Systemwide, PA (Agreement 1125)	PA Turnpike Commission P.O. Box 67676 Harrisburg, PA 17106-7676	NA 2011		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
PENNDOT Agencywide – Western Waste Management, PA (Agreement 354A02-2)	PENNDOT Bureau of Office Services P.O. Box 3060 Harrisburg, PA 17105	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
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, 3rd 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
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.
U.S. Route 35 Improvements, Mason and Kanawha Counties, WV	WV Division of Highways State Capitol Complex 1900 Kanawha Blvd., East Building 5, Room A-416	$3,400,000 (fee)	2013	YES	Kimley-Horn and Associates, Inc.
Greene County Bridge No. 99, Greene County, PA	Greene County Board of Commissioners 93 E. High Street Waynesburg, PA 15370	$57,000 (fee)	2013	YES	Widmer Engineering Inc.
S.R. 0422 Improvement Project, Armstrong and Indiana Counties, PA	PENNDOT District 10-0 2550 Oakland Avenue P.O. Box 429 Indiana, PA 15701	$126,000 (fee)	2013	NA	PB Americas, Inc.
S.R. 1001, Section C01, Farrandsville Road Reconstruction / Realignment, Clinton County, PA	PENNDOT District 2-0 70 PennDOT Drive Clearfield, PA 16830	$51,000 (fee)	2014	NO	Sucevic, Piccolomini & Kuchar Engineering, Inc.
S.R. 0019, Section P02, Morrisville Widening and Relocation Project, Greene County, PA	PENNDOT District 12-0 P.O. Box 459 825 North Gallatin Avenue Ext., Uniontown, PA 15401	$275,000 (fee)	2014	NO	TransAssociates, Inc.
S.R. 0021, Section H10, Roadway Improvement, Fayette County, PA	PENNDOT District 12-0 P.O. Box 459 825 North Gallatin Avenue Ext., Uniontown, PA 15401	$277,000 (fee)	2014	YES	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: September 14, 2015

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	John W. Gunnett, P.G.	Gerald W. Longenecker, P.E.	Mark A. Williams	Joseph E. Mills	Timothy A. Denicola	Brent A. Sapen	Albert J. Budinsky	Donald W. Polly, E.I.T.	Thomas R. Johnston, Jr.
Kelly's Creek Watershed AMD Survey and Restoration Plan, Kanawha County, West Virginia	C											X		X		X						P			
Valley Point #12 AMD Remediation Project, Preston County, West Virginia	C		X		X	X					X	X	X	X		X						P			
North Fork Greens Run AMD Remediation Project, Preston County, West Virginia	C		X			X					X	X	X	X		X				M						
Midde Creek Gob Pile Reclamation Project, Cedar Bluff, Virginia	C		X			X	X	X			X	X				X	X				M					P
Pole Bridge Road AML Remediation Project, Wise County, Virginia	C		X	X	X	X			X		X	X		X			X				M					
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				M					
Armstrong Energy Comment Letter to PA DEP, Armstrong County, Pennsylvanai	C		X			X			X												M/P					
Sequatchie Valley Coal Corporation, Sequatchie County, Tennessee	C		X			X	X				X	X	X	X									P	P		
Rausch Creek Land, L.P., Schuylkill County, Pennsylvania	C		X	X	X	X				X	X	X	X	X	X		X						P	P		

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Six Mile Run, Sandy Run and Longs Run AMD Assessment and Remediation Plan, Bedford County, Pennsylvania	C	X	X	X	X	X						X	X	X		X							P			
Blackleggs Creek Acid Mine Drainage Discharge Treatment Projects, Indiana County, Pennsylvania	C	X	X	X	X	X	X				X		X	X									P	M/P		
Boyce Park Acid Mine Drainage Remediation Project, Allegheny County, Pennsylvania	C	X	X	X		X					X	X	X	X									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			M						
Spruell Abandoned Mine Discharge Fayette County, Pennsylvania	C/P										X					X							P	M/P		
Alpha Natural Resources Environmental Audits	C									X		X	X	X						M	P	P		P		
Kolb Polishing Wetland Passive AMD Treatment System	C			X	X	X	X				X		X	X					M		P		P	M/P		
Brinkerton Phase II Passive AMD Treatment System	C					X					X	X	X	X					M		P	P	P	M/P		
Broadtop Township Pssive AMD Treatment Systems	C		X	X	X	X						X	X	X		X			M		M	P	P			
Brubaker Run Active Calcium Oxide AMD Treatment Sytem	C					X					X	X	X	X					M		P	M	P	P		

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Buck Mountain 2 Passive AMD Treatment System Evaluation and Recommendations Report	C					X					X	X	X	X					M					P		
Future Power, Susquehanna River Basin Commission Permitting Studies	C					X					X	X	X	X					M		P	P		P		
FODC Sandy Run Passive AMD Remediation Project	C				X	X					X	X	X	X					M		P	M	P			
Lausanne Tunnel AMD Passive Treatment System	C					X					X	X	X	X					M			M		P		
Site 42 Passvie AMD Treatment System	C					X					X	X	X	X					M		P	P	P	M		
Spruell Passive AMD Treatment System	C		X			X					X	X		X		X			M		P	P	P	M		
Pennsylvania DNR Abandoned Mine Land Reclamation	C	X	X	X		X					X				X		X							M	P	
Wyoming DEP Abdandoned Mine Land Reclamation	C	X	X	X		X					X				X		X							M	P	
National Park Service AML	C	X	X	X	X	X					X				X		X							M	P	
West Virginia AML Investigation	C		X	X														M								
Kentucky AML Inventory	C		X	X														M								

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Elk Creek Watrershed AML/AMD																										
West Virginia DCNR/EPA																										
VA Office of Mine Land Reclamation/AMD Project	C		X		X						X	X				X	X	M								
Hagerman's Run 2 Permit Application, Lycoming County, PA	C					X					X	X			X		X		M						P	
Gentzel Permit Application, Bellefonte, PA	C					X					X	X			X		X		M						P	
Fairborn/Xenia Engineering & Environmental Design, Mining & Reclamation Planning	C					X					X	X			X		X		M						P	
GOH/BCC Mammoth Engineering/Environmental Design, Mining & Reclamation Planning	C										X	X			X		X		M						P	
Tressler Permit Application, Bellefonte, PA	C					X					X	X			X		X		M						P	
LaFarge Egypt Quarry Reclamation Plan	C					X					X	X			X		X		M						P	
Harleysville Materials Permitting and Mine Planning	C					X					X	X			X		X		M						P	
Berks Products Ontelaunee New Permit Reclamation Planing	C					X					X	X			X		X		M						P	

AML and RELATED PROJECT EXPERIENCE MATRIX

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Rausch Creek Land G.S. Smith Consent Order of Compliance Activities	C					X					X	X			X		X			M				P	
Rohrer's Quarry Engineering & Evnrionmental Design for Reclamation	C					X					X	X			X		X			M				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.

GERALD W. LONGENECKER, P.E.
Associate, Vice President, Engineering Services

EDUCATION:
M.S., Agricultural Engineering, 1980, The Pennsylvania State University

B.S., Agricultural Engineering, 1979, The Pennsylvania State University

PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS:
Professional Engineer, WV, MD, PA, NJ, DE, TN, NC, NM

RELEVANT TRAINING:
Rosgen Level I, "River and Stream Classification/Fluvial Geomorphology Stream Restoration" Short Course, Dave Rosgen, Professional Hydrologist, 1996

Rosgen Level II, "River Morphology and Applications" Short Course, Dave Rosgen, Professional Hydrologist, Pagosa Springs, Colorado, 1997

Rosgen Level III, "River Assessment and Monitoring" Short Course, Dave Rosgen, Professional Hydrologist, Pagosa Springs, Colorado, 1997

Rosgen Level IV, "River Restoration and Natural Channel Design" Short Course, Dave Rosgen, Professional Hydrologist, Pagosa Springs, Colorado, 1997

YEARS OF EXPERIENCE:
35 Years

A licensed Professional Engineer, Mr. Longenecker has 35 years experience in the engineering consulting field. This experience has been gained through the management and technical participation in a broad range of projects including mine reclamation and mine drainage treatment, stream restoration, watershed assessments, stormwater management, solid waste handling, industrial and sanitary wastewater treatment, dam safety, water resources engineering, and wetland-related evaluations. As Vice President and an Associate of the firm, Mr. Longenecker provides various levels of oversight, management and technical direction on the company's civil and environmental engineering projects performed in its various multi-state office locations.

PROFESSIONAL EXPERIENCE

Mine Reclamation and Acid Mine Drainage Treatment – Mr. Longenecker served as principle engineer and project manager on numerous active and reclaimed coal and non-coal mine sites throughout the Mid-Atlantic and Southern states regions. Project management responsibilities have included projects involving the development and oversight of geotechnical testing plans for embankment and slope stability and evaluating remedial measures. Technical project assignments have involved developing water management and site reclamation plans to stabilize sites and control mine drainage. Assignments have involved the management and design of a mine drainage treatment system at a 1,500-acre coal mine. The project focused on the restoration of the impacted receiving streams and improving water quality sufficiently to support native aquatic life. Efforts included coordinating efforts to secure OSM phased bond release, performing water balances, hydrogeologic assessments, NPDES permit revision negotiations, evaluation and design of passive mine drainage treatment systems, and general permit coordination with the federal and state regulatory agencies. Following phased bond release for site stabilization, additional refinements for implementing passive mine drainage treatment are ongoing at the present time. Evaluated the economics and performance of chemical treatment and passive treatment systems used for treating degraded water quality at a reclaimed surface coal mine preparation plant. Primary drainage sources included a gob pile, slurry lakes, and upgradient abandoned mine lands. Other assignments have included mine pool pumping to control acid mine drainage seepage, passive and active (chemical addition) mine drainage treatment system design and NPDES permit negotiations for treatment system discharges. Mr. Longenecker has also made technical symposium presentations on the passive treatment of acid mine drainage.

Erosion and Sedimentation Control/NPDES Stormwater Permits - Prepared Erosion and Sedimentation Control Plans for a variety of project that have involved earth disturbances and land use changes. These have included temporary and permanent control features and have involved the use of several stabilization techniques. Performed watershed and drainage area assessments to evaluate and stabilize sedimentation sources and reduce loadings designed to improve water quality and the development of mitigation measures to address sedimentation pollution achieve TMDL waste load reductions.

Natural Stream Restoration - Completed approximately 100 projects using fluvial geomorphology (FGM) methodologies and natural stable channel techniques for stream restoration and relocation. Stream designs have incorporated pools, runs, and riffles into the stream bottom to enhance aquatic life and dissipate energy. Stabilization designs have included cross rock weirs, rock vanes and restoration techniques consisting of streambank grading,

fencing, and establishment of riparian buffer zones. Directed the classification of miles of stream using FGM to identify locations for stabilization and restoration. Provided training sessions to introduce Department of Transportation (DOT) personnel to FGM principles in both Pennsylvania and New York. Served as Project Manager for mitigation projects throughout the Northeast and MidAtlantic states.

Stormwater Management - Managed the design of numerous stormwater runoff control facilities in accordance with current Best Management Practices to reduce runoff volume, control peak runoff rates, and improve water quality. Projects have been designed in accordance with various Stormwater Best Management Practices manuals and regulatory guidance documents. Benefits included the control of runoff volume, flooding events, and peak runoff rates as well as to limit the pollutant and sediment loads experienced by downstream areas. Directed the analysis of stormwater control facilities where the analysis was focused on evaluating innovative and alternative techniques which would enhance groundwater recharge while controlling pollutant loads. Supervised numerous watershed modeling projects using HEC-RAS and HEC-HMS models for stormwater retrofit projects and floodplain analysis and developed design bases for culverts and bridge crossings.

Wetland Delineation, Mitigation, and Restoration - Directed numerous wetland restoration projects under enforcement actions by the U.S. Army Corps of Engineers for compliance with the Clean Water Act. These project sites have involved unpermitted fill placement at a townhouse development and construction site. Supervised numerous wetland mitigation projects in conjunction with obtaining permits from regulatory agencies. Activities have included modification and modeling of the site to support hydrology, planting/seeding specifications, construction supervision, and long-term monitoring to evaluate success. Managed more than 150 wetland delineations in coastal tidal marsh and inland undisturbed areas in accordance with state and federal methodologies and requirements.

PROJECT EXPERIENCE

Sequatchie Valley Coal, Dunlap, TN - Assignments involved the management and design of a mine drainage treatment system at this 1,500-acre reclamed coal mine. The project focused on the restoration of the impacted receiving streams and improving water quality sufficiently to support native aquatic life. Efforts included coordinating efforts to secure OSM phased bond release, performing water balances, hydrogeologic assessments, NPDES permit revision negotiations, evaluation and design of passive mine drainage treatment systems, and general permit coordination with the federal and state regulatory agencies. Following phased bond release for site stabilization, additional refinements for implementing passive mine drainage treatment are ongoing at the present time.

First Hollow Run, Carbon County, PA – At this coal refuse reclaimed site, the project involved the restoration and stabilization of very high gradient Exceptional Value stream channel confined within a 25-foot deep ravine formed mine spoil. Mr. Longenecker and the design team used an innovative step-pool approach that incorporates keystone step structures. The project was constructed in two phases and the entire project site was heavily planted with native trees and shrubs following completion of the channel restoration work. Ongoing monitoring at the site confirms that the stream channel has maintained its stability and has redevelop aquatic function and value.

Confidential Client - Evaluated the economics and performance of chemical treatment and passive treatment systems used for treating degraded water quality at a reclaimed surface coal mine preparation plant. Primary drainage sources included a gob pile, slurry lakes, and upgradient abandoned mine lands.

Hicks Creek Stream Restoration, Eastern Pennsylvania Coalition of Abandoned Mine Reclamation - Skelly and Loy, Inc. was contracted Eastern Pennsylvania Coalition for Abandoned Mine Reclamation to complete a natural stream channel design using fluvial geomorphic (FGM) principles for Hicks Creek in Luzerne County, PA. This project was one of the first watershed restoration projects which was prioritized in a comprehensive watershed restoration plan, also previously completed by Skelly and Loy. The Hicks Creek watershed encompasses approximately 4 square miles and contains approximately 4.5 miles of perennial stream channel, portions of which flow over areas previously subjected to intensive underground mining activity. In these abandoned mine areas, significant quantities of stream flow were being lost to infiltration into these underground mine areas. Additionally, extremely unstable stream channel conditions were generating hundreds of tons of sediment to downstream portions of the watershed. Skelly and Loy's design included aspects to minimize infiltration losses while restoring natural stability and aquatic habitat to the stream channel. The project is currently in the final stages of permitting agency review.

Nolichuckey Sand Company, Inc., Mine Site Stream Stabilization Project, TN - Mr. Longenecker managed this active sand and gravel mine site project which included field data collection activities and engineering design to implement stream relocation/rehabilitation utilizing fluvial geomorphology methods. Design preparation included plans, profiles, sections, and details for the proposed stream route, width, depth, and slope, habitat structures, and energy dissipating structures. Mr. Longenecker directed the preparation of federal and state permits. Supervised the performance of on-site surveying using conventional and global positioning system to generate engineering drawings. Construction of this project needed to be completed without interruption of active haul roads and mine site operational activities.

Vulcan Materials, Knoxville, TN – Mining activity at this active limestone aggregates quarry were being impacted by groundwater infiltration. The source of this water originated from the perennial stream that flowed immediately adjacent to the active highwall at the site through underlying fractured bedrock. Mr. Longenecker served as lead project engineer for the design of a relocation of this stream channel, including the incorporation of a liner material to eliminate loss of stream flow to the quarry. Natural stream channel (fluvial geomorphic) principles were used for the design of the relocated stream channel. The project entailed securing all regulatory approvals and environmental clearances for the stream relocation.

WV Route 9, Charlestown to Virginia State Line, Post-ROD Studies, Jefferson County, WV. Client: West Virginia Division of Highways - As part of this overall highway design effort, Mr. Longenecker managed the engineering and design efforts required to incorporate natural stream channel design concepts into the stream relocation effort associated with the proposed West Virginia Route 9 segment from Charles Town to Virginia state line, Jefferson County, West Virginia. This project will relocate approximately 1,880 linear feet of Grog Spring Run. Natural stream channel techniques are being integrated to satisfy special conditions of an Army Corps of Engineers Permit. In developing a successful stream relocation plan, it was important to first know the type of stream that exist at the project site. Classifying the stream type present within the study area was completed in the initial steps of this work phase by using field measurement of stream dimension, pattern, and profile. These measurements were collected from the three project areas to define existing stream conditions and stream types based on the Rosgen stream classification system. An analysis was then completed for the proposed relocation routes to determine site controls and conditions which would represent limitations on the relocation design.

Skelly and Loy identified the location of suitable reference reach streams in the study area using aerial photography and U.S.G.S. quadrangle analysis and field reconnaissance which were then used as design models for the project as necessary to meet the design requirements. U.S.G.S. gage sites for the Shenandoah River and other stable channel reaches within the drainage basin were evaluated in order to develop FGM channel dimensions, patterns, and profiles characteristic of stable channel reaches of the same stream type as determined by the concept design. This information was used to determine design data applicable to the study area. All plan sheets were developed in compliance with applicable WVDOH Design Directives and Specifications. Skelly and Loy also developed Special Provisions required for the bidding and construction of the project.

Meadowbrook Road Natural Stream Channel Design, Harrison County, WV. Client: West Virginia Division of Highways - Skelly and Loy, Inc. applied natural stream channel concepts to design the relocation of a stream in association with the reconstruction of Meadowbrook Road in Harrison County, West Virginia. This project will relocate approximately 1,300 linear feet of Simpson Creek within the project area. The originally proposed channel relocation was redesigned by Skelly and Loy to incorporate natural stream channel principles to satisfy special conditions of an Army Corps of Engineers' permit. Incorporating design parameters that typify a natural channel proved to be quite a challenge due to horizontal and vertical constraints resulting from terrain and the proposed roadway design. This challenge was compounded by the fact that Simpson Creek has been impacted by numerous anthropogenic activities throughout the last several decades.

Lodgeville Road Natural Stream Channel Design and Wetland Mitigation, Harrison County, WV. Client: West Virginia Division of Highways. - Skelly and Loy, Inc. applied natural stream channel concepts to design a proposed stream relocation associated with the construction of Lodgeville Road in Harrison County, West Virginia. This project relocated approximately 600 linear feet of an unnamed tributary to Simpson Creek within the project area. The originally proposed channel relocation was redesigned by Skelly and Loy to incorporate a combination of natural stream channel principles and bioengineering to satisfy special conditions of an Army Corps of Engineers' permit.

Incorporating design parameters that typify a natural channel proved to be quite a challenge due to horizontal and vertical constraints resulting from terrain and the proposed roadway design. In this case, physical constraints including the embankment of Interstate 79 limited the available area to a point where a pure natural channel design was not possible. Skelly and Loy incorporated a number of techniques, some typical of natural channel design and some bioengineering concepts, that provided a stable stream reach. The existing stream within the project area had been impacted by numerous anthropogenic activities, including mining, development, highway construction, railroads, etc. Skelly and Loy was also responsible for design of a wetland mitigation site that would replace those wetlands lost from construction of the new roadway. A mitigation site was identified in the headwaters of the tributary within 1/4 mile of the stream relocation and adjacent to the roadway project. A 0.65-acre mitigation site was designed entirely within West Virginia Division of Highways right-of-way, thus requiring no property acquisition. This wetland, in addition to providing functions and values to the impacted wetlands, helps to provide flood storage and treat mine drainage that currently enters the stream.

GERALD W. LONGENECKER, P.E., Associate, Vice President, Engineering Services

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:
[redacted]

YEARS OF EXPERIENCE:
46 Years

Mr. Golkosky is a registered professional engineer with extensive experience in all facets of the 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.

Recent projects include design of an underground white stone mine for a major confidential client in the specialty minerals industry. Tasks included developing optimum access routing, pillar design, and haulage simulation.

Mr. Golkosky's areas of mining specialization include international projects, project management/planning, economic evaluations, due diligence, engineering, mine planning, mineral processing, material handling, 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 & Marston, 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
Kanawha Valley Mining Institute

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

DONALD W. POLLY, E.I.T., Mining Engineer
Associate, Vice-President, Technical Services

EDUCATION:
Certificate, Accounting, King's College and Harrisburg Area Community College

Certificate, Civil Engineering Program, The Pennsylvania State University

PROFESSIONAL REGISTRATIONS:
Engineer-in-Training, PA

RELEVANT TRAINING:
Short Courses: Technical Elements of Surface Coal Mining and Land Reclamation; Elements of Underground Coal Mining, The Pennsylvania State University

Blasting Seminar, American Society of Civil Engineers

YEARS OF EXPERIENCE:
48 Years

Mr. Polly has a combined total of 48 years of mining and civil engineering project experience. His mining responsibilities include mine planning; reclamation plans; equipment selection and comparisons; preparation of illustrative and technical mining manuals; property evaluations; regulatory compliance cost evaluations; detailed mine design; unit operations scheduling; owning and operating costs determination; cash flow analysis; assessment of geology and reserves quantity and quality; and preparation of coal mining and quarry permits. His civil engineering activities have included the design and preparation of construction and right-of-way plans for several interstate, state, and local highway projects.

PROJECT EXPERIENCE

During his 43 years with Skelly and Loy, Mr. Polly has been involved in a variety of mine related projects for both private and government clients. The areas of concentration have been mine planning and reclamation for private clients, and research and development projects for government clients.

His work on surface related mine planning and reclamation activities has included the following projects.

- Texas Quarry Mine Planning, Cockeysville, Maryland
- Acquisition Due Diligence for ECC International, Inc., Baltimore County, Maryland
- Reserve Confirmation Study, Southwestern Ohio Greenfield Site
- Preliminary Underground Limestone Mine Design, Northern Kentucky
- Investigations into Proposed Mining Operations, Reclamation Activities, Power Plant Waste Disposal Requirements, and Contract Negotiations, Albuquerque, New Mexico
- Abandoned Mine Lands Reclamation projects for several sites in Pennsylvania, West Virginia, and Wyoming

PROFESSIONAL EXPERIENCE

Mine Planning - During his tenure at Skelly and Loy, Mr. Polly has been involved in numerous coal and quarry mining projects throughout the country. He has prepared detailed mining plans for coal operations in all of the mining regions throughout the United States. Planning activities have included unit operation scheduling of equipment and manpower, equipment owning and operating costs, reclamation planning, and mine closure activities. He has participated in several feasibility analyses, resource development evaluations, reserve estimates, coal transportation plans, and permits. Mr. Polly has also prepared numerous Yearly and Life-of-Mine Plan Reserve Estimates and Permits for quarry companies.

Reclamation Planning - Mr. Polly's experience in reclamation projects has been extensive. He has involvement with the development of numerous reclamation plans, construction specifications, erosion and sedimentation control plans, and cost estimates for several Abandoned Mine Land (AML) reclamation projects in Pennsylvania, West Virginia, and Wyoming. He has also been engaged in monitoring and inspection of the same. Mr. Polly has prepared and reviewed reclamation plans and cost estimates including ongoing and final reclamation requirements for several coal mine and quarry operations throughout the country. Activities associated with these operations include ongoing and final pit grading; topsoil and subsoil handling; disposal of unsuitable materials; removal of existing haulroads; highwall reduction; facilities

removal and disposal; erosion and sedimentation control plans; and revegetation.
Mr. Polly has also prepared and evaluated numerous regulatory related "reclamation cost claims" that have resulted from changing regulations. Clients included both mining and utility companies.

During his five years as a technician/designer for Rummel, Klepper and Kahl, Mr. Polly was engaged in the preparation of construction and right-of-way plans for numerous highway construction projects. His work consisted of drainage design, horizontal and vertical geometry, quantity computation, cost estimates, and assistance in the drafting of final plans and cross sections. Mr. Polly also participated in the design and preparation of plans for several roadside rest facilities for the interstate system in Pennsylvania. This assignment included the determination of sites for all buildings and parking areas.

DONALD W. POLLY, E.I.T., Mining Engineer, Associate, Vice-President, Technical Services

JOSEPH E. MILLS, Acid Rock Drainage Specialist

EDUCATION:
Bachelor of Science in Biology, 1979,
Frostburg State College,
Frostburg, MD

YEARS OF EXPERIENCE:
35 Years

Mr. Mills joined Skelly and Loy with a thorough background and knowledge of mining, abandoned mine land reclamation and Acid Rock Drainage control and abatement. During his career, Mr. Mills has designed and supervised the construction of 15 active dosing systems and over 50 passive mine drainage treatment systems. Mr. Mills has performed sample collection and data analysis of treatment system effluent. He has evaluated the effectiveness of these AMD Treatment Systems and has recommended remedial actions to improve system performance when necessary. He has performed field collection of water, soil and benthic organisms. Mr. Mills has conducted numerous tours, for all age groups, of active mine sites, AMD Treatment facilities and abandoned mine reclamation projects.

PROFESSIONAL EXPERIENCE

Maryland Department of the Environment, Mining Program – Mr. Mills served as a Surface Mine Compliance Inspector. He conducted State and Federally mandated compliance inspections of active mine sites on a monthly basis and was the lead inspector in charge of Blasting. These inspections ensured company compliance with State of Maryland mining laws and regulations as well as pertinent Federal laws.

Maryland Department of the Environment, Mining Program – Mr. Mills served a lead role in the Acid Mine Drainage Section, and was responsible for the design, bidding, and contracting for construction of AMD Remediation Projects. He developed plans for over 50 passive AMD treatment systems and also for 15 lime dosing units. Mr. Mills oversaw the construction activities of these projects during implementation and was responsible for compliance with environmental permits during construction.

PROFESSIONAL EXPERIENCE

Skelly and Loy, 2015 - Present

Brinkerton AMD System Modification Project – Mr. Mills oversaw major modifications to the Maelstrom Aeration devise and to the final discharge structures. Two Weirs were installed to better monitor the total discharge (≥ 5,000 gpm).

Kolb Polishing Wetland Project – Mr. Mills is overseeing the design, permitting and construction of the final polishing wetland at this existing AMD treatment facility. This project is being conducted by the Blackleggs Creek Watershed Association.

Glade Run/Spruell AMD Remediation – Mr. Mills is actively involved in the grant application, design, permitting and construction of a major modification to the existing AMD treatment project. This project is being conducted by the Western Pennsylvania Conservancy.

Alpha Natural Resources Environmental Audit – Mr. Mills is involved in this EPA mandated, third party audit of Alpha Natural Resources mining permits in West Virginia and Kentucky. All aspects of State and Federal environmental permits are reviewed for compliance as are the field conditions at the mine sites. All observations are documented and loaded into a database. Formal write-ups are completed at the conclusion of each audit for submittal to Alpha and to EPA.

JOSEPH E. MILLS, Acid Rock Drainage Specialist

SXO-D9 AMD Treatment Project, Broadtop Township, PA - Mr. Mills is overseeing the design, permitting and construction of a large, passive, AMD Treatment System. This system is one of many in the watershed, each addressing a different AMD source. This project is being conducted by Broadtop Township (Pa.)

Sovern-Tichnell AMD Project – Mr. Mills assisted in the construction inspection duties at this project. This project is being constructed by the Friends of the Cheat, an active watershed group in the Cheat River drainage.

MDE, Mining Program – Mr. Mills served as Project Manager for the North Branch Potomac River Lime Doser Project. Installed 7 "lime" dosing units in strategically located sites along the Potomac River to insure complete treatment of the AMD in the River. To supplement the dosers, Mr. Mills also designed and constructed 5 passive AMD Treatment Systems in the watershed. These projects collectively restored over 30 miles of the NB of the Potomac River to a fishable and swimmable River. As a result of this project, both Maryland and West Virginia now stock trout into the river on an annual basis and many small recreation based businesses have developed in and near the watershed.

MDE, Mining Program – Mr. Mills served as Project manager for the Aaron Run AMD Remediation Project. He designed and oversaw the construction of 3 passive treatment systems and 1 active, "lime" doser. These projects resulted in Aaron Run being removed from EPA's 303(d) list.

MDE, Mining Program – Mr. Mills served as Project Manager for the Casselman River Alkaline Addition Project. He designed and oversaw the construction of 13 leach beds and sand application stations. These projects have resulted in an overall increase in pH of the mainstem of the Casselman River and have resulted in an increase the brook trout populations in various streams.

MDE, Mining Program – Mr. Mills served as Project Manager for the Cherry Creek Restoration Projects. He designed and oversaw the construction of 3 passive AMD treatment projects and 1 active, "lime" doser. These projects collectively have been responsible for the development of over 1 mile of restored spawning waters for numerous species of fish. Cherry Creek is now the single most productive spawning waters feeding Deep Creek Lake.

Maryland Department of the Environment, 1981 - 2015

Reclamation Inspector, 1981 – 1995 - Responsible for the review and approval of Mining Plans under SMCRA and Maryland Mining Law and Regulation. Directed the mining and reclamation of 34 surface mines permitted under SCMRA.

Michael's Run Reclamation Project - Completed in 1991, located near Barton, MD, that removed and regraded over 9,000 cubic yards of abandoned coal refuse over a 3 acre area. Projects goals were AMD treatment, utilizing Open Limestone Ditches, slope stability utilizing refuse removal and toe of slope stabilization with gabion baskets and rock buttresses.

Ocean Refuse Removal Project - Completed in 1991, located near Midland, MD, that removed over 76,000 cubic yards of abandoned coal refuse, reconstructed over 2,000 lineal feet of stream, removed abandoned mine buildings and revegetated the 11 acre project area.

Eckhart Gob Pile Reclamation Project - Completed in 1991, removed a dangerous, collapsed drainage tunnel, removed and regraded over 140,000 cubic yards of abandoned coal refuse, re-established the stream channel and revegetated the 8 acre site.

Lostland Run Coal Waste Stabilization Project - Completed in 1990, is located near Loch Lynn, MD, included the installation of a mine portal wet seal, the removal of over 7,200 cubic yards of mine refuse from the stream bank, placement of stream bank protection and vegetation of the disturbed area.

Aaron's Run Road Refuse Reclamation Project - Completed in 1989, located near Westernport, MD, involved the regrading and revegetation of 8 acres of abandoned coal mine refuse.

JOSEPH E. MILLS, Acid Rock Drainage Specialist

Potomac Hill Reclamation Project - Completed in 1989, located near Barton, MD, included the installation of 2 wet seals, the removal of a tipple structure, and the reclamation of 2 acres of abandoned coal mine refuse.

Amish Road/Tarkiln Run Reclamation Project - Completed in 1986, located near Grantsville, MD, involved the installation of core drains, removal of refuse from the stream bank, removal of a large quantity of illegally dumped used tires, the elimination of over 700 feet of dangerous highwall and the reclamation of over 30 acres of abandoned mine area.

Casselman Deep Mine Project - Completed in 1986, located near Grantsville, MD, involved the installation of 3 wet seals and the regrading of 1 acre of abandoned mine area.
Fund Source: Federal RAMP Appropriation 1986

Meadow Lake Reclamation Project - Completed in 1986, located near Grantsville, MD, removed coal refuse from Meadow Run, and regraded and revegetated over 32 acres of abandoned coal mine refuse.

Ocean Gob Piles Reclamation Project - Completed in 1992, near Midland, MD, involved the regrading and revegetation of over 13 acres of abandoned coal mine refuse and the removal of dangerous mine structures.

Wolfden Run Reclamation Project - Completed in 1992, located near Kitzmiller, MD, removed coal refuse from the channel of Wolfden Run. The project included stream channel reconstruction and regrading of over 5 acres of disturbed area.

Durst Road Abandoned Mine Reclamation Project - Completed in 1993, located near Grantsville, MD, involved the elimination of open pits, impounded water, and unstable refuse within the stream banks of the Casselman River and the regrading and revegetation of 38 acres of abandoned coal refuse.

Bessemer Coal Company, Permit 296, Area "A" Mine Forfeiture Reclamation Project - Completed in 1992, located near Mt. Savage, MD, involved the reclamation of a 48 acre Bond Forfeited mine permit.

Jones Coal Company, Permit 376 Mine Forfeiture Reclamation Project - Completed in 1993, located near Friendsville, MD, involved the reclamation of a 34 acre, Bond Forfeited mine permit.

Bessemer Coal Company, Permit 296, Area "F" Mine Forfeiture Project - Completed in 1993, located near Mt. Savage, MD, involved the reclamation of a 20.5 acre, Bond Forfeited mine permit.

Delta Coal Company, Permit 378 Mine Forfeiture Reclamation Project - Completed in 1997, located near Frostburg, MD, involved the reclamation of a 40 acre, Bond Forfeited mine permit.

Oliver Mining Company Permit 233 Mine Forfeiture Reclamation Project - Completed in 2001, located near Barton, MD, involved the reclamation of 20 acres in conjunction with an active surface3 mine.

Shallmar Coal Refuse Stabilization Project - Completed in 2003, located near Shallmar, MD, included the installation of 3 wet seals, the routing of discharging AMD, the installation of a Lime Doser to treat the AMD, and the regrading of over 26 acres of abandoned mine refuse.

Kitzmiller Coal Waste Stabilization Project - Completed in 2003, located near Kitzmiller, MD, involved the removal of burning mine refuse, extinguishing the fire, removal of refuse in the Potomac River, establishment of discharge channels and the regrading and revegetation of 16 acres of abandoned mine refuse.

Oak Hill Landslide Stabilization Project - Completed in 2003, located near Lonaconing, MD, stabilized a coal refuse landslide to eliminate blockage in the stream channel of Georges Creek, construction of a drainage channel the convey AMD away from the refuse material and the regrading and revegetation of 6 acres of coal refuse.

Mill Run II Abandoned Mine Reclamation Project - Completed in 2006, located near Barton, MD, involved the removal of abandoned deep mine support structures, regrading of 2.5 acres of coal refuse, and the restoration of 200 feet of stream channel.

JOSEPH E. MILLS, Acid Rock Drainage Specialist

Zilman Deep Mine Closure Project - Completed in 2009, located near Zilman, MD, involved the installation of a steel, Bat Gate to prevent human access into the underground mine workings while preserving bat habitat.

PUBLICATIONS

"North Branch of the Potomac River Doser Project: An Update", Presented at 19th Annual National Association of Abandoned Mine Land Programs Conference in Pittsburgh, PA, November 1998

"The Recovery of the North Branch: 1940 to 2000 and Beyond", Presented at the 21st West Virginia Surface Mine Drainage Task Force Symposium, April 2000

"Windmills of Your Mine: Treating Acid In Drainage in Maryland", Presented at the 22nd Annual National Association of Abandoned Mine Land Programs Conference in Steamboat Springs, Colorado, October 2000

"Acid Mine Drainage: An Overview", Presented at the Chesapeake Bay Foundation's Winter Education Conference, Tilghman Island, Maryland, February 2001

"Mill Run: Recovery of a Small Stream in Western Maryland", news article in MDEnvironment, August 2001

"The Recovery of the North Branch: 1940 to 2000 and Beyond", Presented at the 22nd Annual National Association of Abandoned Mine Land Programs Conference in Athens, Ohio, August 2001

"Mill Run: Recover of a Small Stream in Western Maryland using Limestone Sand Application and Pulse Limestone Bed Technology", Presented at the 23rd Annual National Association of Abandoned Mine Land Programs Conference in Lexington, Kentucky, July 2002

"The North Branch of the Potomac River: Results of Two Years of Lime Dosing", Presented at the 23rd West Virginia Surface Mine Drainage Task Force Symposium, April 2004

"Mining in Maryland", Presented to "Leadership Allegany", November 2004

"Acid Mine Drainage Abatement in Maryland", Presented at the West Branch Susquehanna River Restoration Symposium, March 2005

"Acid Mine Drainage in Maryland: Past, Present, and Future", Presented at the Maryland Biological Stream Survey Annual Conference, July 2005

"The North Branch of the Potomac River: Achieving Watershed Scale Restoration Success", Presented at the West Branch Susquehanna River Restoration Symposium, March 2007

"Elementary School Visits Limestone Doser", news article in MDEnvironment, June 2007

Numerous Power Point Presentations to local Civic Organizations and local Watershed Associations

AWARDS, ACTIVITIES and MEMBERSHIPS

2000 "Good Neighbor" Award, Nemacolin Chapter of Trout Unlimited
2005 "Good Neighbor" Award, Youghiogheny Chapter of Trout Unlimited
Member, Acid Mine Drainage Subcommittee of the Maryland State Water Quality Advisory Committee
Vice President of the Western Maryland Chapter of the National Wild Turkey Federation
Member of Trout Unlimited
Member of the Rocky Mountain Elk Foundation

JOSEPH E. MILLS, Acid Rock Drainage Specialist

TIMOTHY A. DENICOLA, Acid Rock Drainage Specialist

EDUCATION:
B.S., Chemistry, 2006, Clarion University of Pennsylvania

M.S, Geology, 2013, West Virginia University

YEARS OF EXPERIENCE:
7 Years

Mr. Denicola joined Skelly and Loy with a thorough background in geochemistry, geology, and hydrology, having studied and worked in watershed remediation, university and laboratory settings, and quality control over seven years duration. During that time, Mr. Denicola performed mine drainage research studies at two universities, managed several mine drainage remediation projects, facilitated a mine pool geotechnical study, composed a watershed based plan, and acquired funding for several additional projects. He also managed administrative, educational, and outreach components for a non-profit with an emphasis in watershed restoration. As a result, Mr. Denicola is adept at assessing mine water contamination issues and developing remediation efforts, communicating with the necessary agencies for funding and permitting, and developing and managing remediation and institutional budgets. During this time he performed field data collection and laboratory analysis, evaluated flow rates, audited passive and active AMD treatment systems, maintained databases, worked with landowners, and local, state, and federal agencies, and conducted software based geochemical and statistical evaluations related to mine water discharge and the associated contamination issues.

PROFESSIONAL EXPERIENCE

Friends of Deckers Creek, Water Remediation Project Manager and Interim Executive Director - Mr. Denicola responsibilities included:

- Managed all stages of project completion, i.e., assessment of contaminate sources, funding, permitting, engineering, construction, analysis, reporting, and maintenance of water quality improvement projects.
- Developed annual water remediation budgets, successfully acquired funding toward additional water quality improvement projects and administrative requirements.
- Communicated with, and obtained legal, notarized right-of-entry agreements with landowners.
- Conducted extensive field chemical and hydrologic sampling and maintained database.
- Organized and managed community outreach, volunteer, and fundraising activities. Managed administrative duties, institutional budgets, employees, and finances.
- Supported water remediation program, concurrently progressed multiple projects, obtained various permits, communicated with various local, state, and federal agencies, composed extensive progress and financial reports, improved several miles of stream.

West Virginia University, Department of Geology - Research Student and Graduate Teaching Assistant - Studied the fundamentals of structural geology, sedimentology, and stratigraphy. Composed thesis entitled: “Geochemistry of Mine Pool Discharges in the Pittsburgh Coal Basin." Conducted field chemical and hydrologic sampling, performed laboratory analysis and QA/QC. Interpreted geochemical and hydrologic data utilizing “ArcMap, PHREEQc, and R” software. Taught entry level geology curriculum, assisted various in-state and national geology courses.

Home Shopping Network, QA Product Evaluator - Worked within QA Chemically Regulated Division, evaluated within FTC and FDA standards. Examined physical samples, organized inspections, and interpreted inspection reports. Analyzed risk and ensured product retail claims are scientifically substantiated. Communicated company wide, nationwide and overseas to

TIMOTHY A. DENICOLA, Acid Rock Drainage Specialist

organize logistics processes. Monitored manufacturing from raw materials to completion.ng from raw materials to completion.

National Forensic Science Technology Center, Laboratory Technician - Validated drug kits for sensitivity/specificity to various cutting agents at varying concentration. Developed presentation of findings in regard to validation study to be presented in Washington D.C. Participated in validation of portable field unit GC/MS/MS.

PROJECT EXPERIENCE

Evaluation of Titanium Dioxide Semi-Conductors for Iron Oxidation - As an undergraduate Mr. Denicola participated in a study that utilized ultraviolet radiation stimulated titanium oxide semi-conductor to expedite iron oxidation in abandoned mine discharges characterized by net-alkaline pH and high ferrous iron concentrations. Large scale application has yet to be utilized, but the fundamentals warrant further research.

Diurnal Cycling of Selenium in Fly-Ash Pond Discharges - As a graduate student, Mr. Denicola participated in a study that investigated diurnal cycling of selenium in coal fired fly ash pond discharges. The purpose was to evaluate co-precipitation with other metals on a diurnal cycle and to incorporate this into future remediation techniques. Ultimately, diurnal cycling was not observed during this study, but the research provided insight into geochemical processes relevant to the mining industry today.

Geochemistry of Flooded Underground Mine Pools in the Pittsburgh Coal Basin - As a graduate student, Mr. Denicola participated in a study to characterize waters of flooded underground mine pools. Though abandoned mine drainage is typically associated with high acidity, iron, aluminum, and manganese, geochemical and statistical techniques revealed a range of mine water classifications, both natural and anthropogenic induced.

Kanes Creek South Site #3, Preston County, West Virginia - Several acid mine discharges impairing Dills Run in Preston County, WV, required development of a passive remediation system. Mr. Denicola oversaw final stages of system design, construction storm water permitting, and WV Non-Point Source (NPS) 319 and Office of Surface Mining (OSM) Watershed Cooperative Agreement (WCAP) grants management, as well as conducted construction oversight and completion of pre and post-construction monitoring. The final system ultimately consists of a flushing limestone bed followed by two settling ponds in series. The system is successfully neutralizing all acidity, introducing residual alkalinity, and is removing all metals to analytical minimum detection limits.

Satcher Pre-Treatment Pond (SPTP) - The SPTP was constructed to handle severe AMD characterized by high acidity, iron, and aluminum. In 2013, the system required refurbishment. Chemical and hydrologic assessment, funding acquisition, design, and construction were completed by Mr. Denicola and the landowner. The resulting system is an improved flushing limestone bed with improved hydrologic capacity, acid neutralization, and metals removal.

Slabcamp Tributary AMD Remediation, Preston County, West Virginia - Four severe AMDs are impairing a tributary to Slabcamp Run and a 5.4 acre wetland in Preston County, WV. Mr. Denicola completed pre-construction monitoring, execution of landowner right-of-entry agreements, acquisition of an environmental consulting firm, communication with the U.S. Army Corps of Engineers (USACE) regarding Nationwide 27 permitting, communication with State Historic Preservation Office (SHPO) to complete a Section 106 review, communication with WV Department of Natural Resources (WVDNR) to complete a National Environmental Policy Act (NEPA) review and composed an Environmental Assessment (EA), communicated with Region VI Planning and Development Council for the necessary consultation letter, and assisted development of a conceptual design. Final stages of design and permitting are underway and the system will ultimately proceed to construction in 2015.

Ingrand Mine AMD Remediation, Preston County, West Virginia - Two severe AMDs impairing Dills Run, Preston County, WV, required development of a passive remediation system. Mr. Denicola oversaw pre-construction monitoring, completion of land purchase through execution of a sub-divided land deed, acquisition of an environmental consulting firm, communication with the U.S. Army Corps of Engineers, SHPO, NEPA, and Region VI, and assisted development of a final design with associated specifications, bid, and contract documents. Scheduled for construction in 2015, the passive treatment system will utilize a flushing limestone leach bed, two settling ponds, an anaerobic vertical flow wetland (AVFW), and a polishing wetland.

TIMOTHY A. DENICOLA, Acid Rock Drainage Specialist

Valley Point #12 Refurbishment, Kanes Creek South Site #1 and Valley Highwall #3 Upgrades - After years of successful acid neutralization and metals load reductions at numerous systems within the Deckers Creek Watershed, system efficacy had reduced at several and refurbishments were necessary. Mr. Denicola oversaw extensive system assessments and coordinated with landowners and the Deckers Creek Restoration team to facilitate improvements. The result was award of funding for two projects, a completed design for one, and a funding request in process for the final system.

Successive Alkalinity Producing System and Active Lime Doser Assessments - As a responsibility of project management, Mr. Denicola thoroughly audited all existing systems within the Deckers Creek watershed. The most extensive audits were conducted at a successive alkalinity producing system (SAPS) that utilizes flushing limestone leach beds, settling ponds, and an anaerobic vertical flow wetland (AVFW). Chemical, hydrologic, and redox potential data was collected and geochemical software was utilized to evaluate the iron reducing capability of the AVFW, which ultimately proved to be highly successful. The SAPS was receiving AMD with pH=2.6, and high ferric iron and aluminum concentrations, and was discharging water of circum-neutral pH with metals below minimum detection limits. The AVFW alone displayed a redox potential of -0.093 V and conversion of all ferric iron into the ferrous form. In addition, The Deckers Creek watershed utilizes two active, tipping bucket lime dosers for neutralization of severely degrading AMD. Mr. Denicola thoroughly audited both active systems through a series of geochemical sampling and evaluation techniques. The results of the audits substantiated the necessity of future funding for refurbishment.

Richard Mine Geotechnical Study - The Richard mine discharges 400 gallon per minute of water characterized by pH=4.0 and high iron and aluminum concentrations. The discharge emanates from a partially flooded mine pool within a 2300 acre mining complex. Treatment will require a full-scale active facility and to assess the design requirements Mr. Denicola oversaw acquisition of an environmental consulting firm for successful installation of a 342' deep monitoring well. To facilitate the project Mr. Denicola executed a notarized landowner entry agreement, obtained and evaluated mine maps, and utilized field pumps and transducers to monitor water level and chemistry of the Richard mine pool.

Clean Creek Program - Since 2002, the Friends of Deckers Creek has participated in the Clean Creek Program (CCP) which consists of quarterly chemical, biological, and flow sampling at thirteen key locations along the twenty-four mile length of Deckers Creek. In addition, collected data is compiled into an annual State of the Creek report for distribution to community members and funding agencies. Mr. Denicola took an active role in performing CCP duties, funding acquisition, and report writing.

Watershed Based Plan and Quality Assurance Protection Plan - As a responsibility of project management, Mr. Denicola composed a Watershed Based Plan (WBP) and Quality Assurance Protection Plan (QAPP) for approval by the U.S. Environmental Protection Agency (EPA). The WBP identifies priority remediation sites to meet compliance with West Virginia Department of Environmental Protection (WVDEP) Total Maximum Daily Loads (TMDL) requirements for the WV 303(d) list of impaired streams. In addition, Mr. Denicola composed a QAPP to ensure EPA accepted sampling and data handling protocols were being utilized universally across all staff members and sampling events within the watershed.

RELEVANT TRAINING

During 2013, Mr. Denicola participated in 15 hours of advanced AMDtreat Mine Drainage Cost Calculation software training provided by the U.S. Office of Surface Mining.

During 2013, Mr. Denicola participated in an 8 hour Construction Oversight workshop hosted by the West Virginia Department of Environmental Protection to aide watershed remediation project managers in addressing the critical details of AMD treatment system construction.

During 2013, Mr. Denicola participated in an 8 hour Action Planning workshop hosted by West Virginia Department of Environmental Protection to aide non-profits in project development.

TIMOTHY A. DENICOLA, Acid Rock Drainage Specialist

PUBLICATIONS

Denicola, T. 2013. Geochemistry of Mine Pool Discharges in the Pittsburgh Coal Basin. West Virginia University Electronic Thesis and Dissertation. August, 2013.

In Proceedings, Geological Society of America, Denver, Colorado; October 2013:
Geochemistry of Mine Pool Discharges in the Pittsburgh Coal Basin. Paper No. 245-9.

Updates to Deckers Creek Watershed Based Plan. Friends of Deckers Creek, Monongalia County, WV. November 2014.

PROFESSIONAL AFFILIATIONS

Previous member of the following organizations:
Sigma Gamma Epsilon, Student Chapter, 2010 – 2013
American Chemical Society, Student Chapter, 2003 – 2006

TIMOTHY A. DENICOLA, Acid Rock Drainage Specialist

BRENT A. SAPEN, Civil Design Specialist

EDUCATION:
B.S., Structural Design and Construction Engineering Technology, 1987, The Pennsylvania State University

YEARS OF EXPERIENCE:
29 Years

With over 29 years of experience, Mr. Sapen serves as a Project Manager within the Engineering Services Group of Skelly and Loy, Inc. He has direct project-related experience in the fields of civil engineering and design, mining, and environmental engineering. Mr. Sapen has been involved in the preparation of site development plans for many commercial, residential and industrial construction projects. His experience in land development has included the preparation of site development plans, contract documents, highway occupancy permits, and local and State permit applications. The work associated with these projects includes site grading, bituminous and cement concrete pavements, sidewalks, curbing, retaining walls, erosion and sedimentation control planning, and stormwater management. Mr. Sapen also performs map development and prepares the required design and permit drawings.

He has prepared numerous acid mine drainage passive treatment system designs for sites throughout Pennsylvania and West Virginia. The systems included anoxic limestone drains, limestone ponds, sulfate bacteria reducing beds, and vertical flow wetlands. He also prepared zoning applications for Marcellus Shale projects and conducted core drilling and sampling, erosion and sedimentation control planning, foundation and retaining wall designs, bituminous and cement concrete pavement designs, and the design of wetland habitat replacement and stream relocations. Mr. Sapen has also provided inspection services for the concrete pavements, and structural steel building systems.

PROFESSIONAL EXPERIENCE

Mine Drainage – The work associated with mine drainage included the design of passive treatment systems for various clientele including watershed associations, municipalities, army corps of engineers, mining companies, and private individuals. The passive treatment system designs included layout and grading of vertical flow wetlands, limestone ponds, anoxic limestone drains, and sulfate bacteria reducing beds. The total treatment system also included the design of treatment ponds, wetland areas, and channels. Upon design completion, quantity takeoffs were performed and construction cost estimates prepared for the treatment systems.

Land Development Planning - Preparation of numerous subdivision and land development plans for commercial, residential, and industrial construction projects. His land development experience includes preparation of site development plans, contract documents, and local and State permit applications in addition to Schematic Design Phase Reports, Parking Studies, and PennDOT Highway Occupancy Permit plans. He has managed various projects that included design of drainage corrections, site layout and grading, stormwater management design, and erosion and sedimentation control as well as construction inspection and monitoring. In addition, Mr. Sapen also was involved with numerous ALTA/ACSM Surveys for various clients.

Site Development - Preparation of site development plans for various projects for TYCO Electronics (formerly AMP, Inc.). Work performed included a site grading plan, design of a railway siding, erosion and sedimentation control planning, pavement design, stormwater management, and the preparation of all local permit applications. Performed site investigation to determine sources of groundwater and/or surface waters discharging through wall/floor joints at the AMP, Inc., Headquarters Building in Harrisburg, PA.

BRENT A. SAPEN, Civil Design Specialist

Land Surveying - Prepared ALTA/ACSM survey plans for the acquisition of existing quarry and asphalt plant operations located on three separate sites for U.S. Silica Company as well as for a large warehousing facility, two quarry sites in eastern Pennsylvania, and an industrial facility in Harrisonburg, Virginia.

PROJECT EXPERIENCE

Valley Point #12 Abandoned Mine Drainage Remediation Project, Preston County, WV - Skelly and Loy was hired to provide engineering and environmental services to remediate the AMD from two discharges located at this site. The engineering design called for the collection of the discharges in a limestone leach bed for pre-treatment. Mr. Sapen provided engineering design services in preparation of the design drawings which included layout, grading, details, and cut/fill and storage volumetric calculations.

Porter Tunnel Mine Seal, Schuylkill County, PA - Skelly and Loy was hired to resolve structural issues associated with the tunnel as well as water treatment concerns with the tunnel discharge. As part of this effort, a wet mine seal was designed for the Porter Tunnel as well as two conventional mine seals at associated air shaft and access points to the mine. Mr. Sapen provided engineering design services in preparation of the design drawings which included layout, grading, and details.

Glade Run Drift Mine Discharge, Fayette County, PA - Skelly and Loy in coordination with The Chestnut Ridge Chapter of Trout Unlimited, is continuing the effort to restore the Youghiogheny River by addressing Acid Mine Drainage discharges to Glade Run. Skelly and Loy's role in this project included treatment system design, construction oversight, and final water quality monitoring. The project utilized a two-phased approach with each using Anoxic Limestone Drain Technology. For this effort, Mr. Sapen assisted the Project Manager in preparation of the engineering design drawings for the proposed treatment system.

Big Run #2 Acid Mine Drainage Discharge Treatment, Indiana County, PA - Skelly and Loy was contracted to complete the engineering design and permitting of the passive treatment system of the Big Run #2 discharge into Blackleggs Creek. The goal of the project was to construct and operate a passive AMD Treatment system to reduce the aluminum and acidity loads while adding some excess alkalinity to Big Run and Blackleggs Creek. For this effort, Mr. Sapen provided engineering design services in preparation of the design drawings which included layout, grading, and details.

Kelly's Creek Water Quality Assessment/AMD Remediation, Kanawha County, WV - Skelly and Loy completed engineering and environmental services to remediate the AMD throughout the Sugarcamp Branch and Horsemill Branch sub-basins. Services included site investigations and measurements, aquatic resource investigations, water quality sampling and testing, engineering design, state and local federal agency coordination, and assistance in permitting. Mr. Sapen assisted in the preparation of the engineering design drawings and bid documents for the project.

Kettle Creek Watershed Acid Mine Drainage Remediation, Tioga and Potter Counties, PA – Mr. Sapen prepared the conceptual designs and cost estimates of passive treatment systems for approximately 50 separate mine drainage sites throughout the Kettle Creek watershed located in Tioga and Potter Counties in north-central Pennsylvania. The passive treatment systems included anoxic limestone drains, limestone ponds, sulfate bacteria reducing beds, and vertical flow wetlands, as well as ponds and wetlands. This project was performed for the U.S. Army Corps of Engineers.

Broad Top Township, PA - Mr. Sapen has served as the Civil Design Specialist for the design, permitting, and construction of more than a dozen passive AMD treatment systems in Broad Top Township. Mr. Sapen assisted in the design and permitting associated with the passive treatment systems. Some of the projects required the use of mine seals, mine pool manipulation, and treatment technologies capable of treating high flow and/or high level acidity discharges.

PennDOT I-99 Sections A-12 and C-12, State College, PA - Mr. Sapen served as Civil Design Specialist and assisted in the preparation of design drawings and permitting of the active chemical treatment systems at the site. Mr. Sapen assisted in the design 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.

BRENT A. SAPEN, Civil Design Specialist

Orbisonia-Rock Hill Joint Municipal Authority, Hungtingdon County, PA – Mr. Sapen served as Civil Design Specialist for the design and permitting for two municipal water projects. One project included preparation of design drawings and a Highway Occupancy Permit package for the replacement of an existing water main. The second project involved preparation of subdivision and land development plans for the design of a new water tank and associated water mains.

Nixon Park, York County, PA - Mr. Sapen was the project designer for an approximately 155 feet long, low-profile, pedestrian boardwalk over and across a wetland area and stream channel. The primary boardwalk section was four feet in width built on concrete piers, pressure treated lumber for posts, beams, and joists, and composite decking boards for the finished surface. There are two “bump-outs” offset off the main boardwalk path as an observation deck. The boardwalk was designed as a low profile walkway. The boardwalk crosses a stream channel which required a guard/railing on the two sides of the boardwalk.

Friends of the Wissahickon, Valley Green Road, Philadelphia, Philadelphia County, PA - Mr. Sapen was the Project Manager and designer for the preparation of plans, specifications, and contract documents for the reconstruction of a bituminous paved parking lot. The project included reconstruction of previously failed areas, resurfacing other areas, timber fencing and landscaping along the edge of the parking area adjacent to a stream channel. In addition, we also provided bid and construction phase services which included receiving and evaluating bids, selection of the contractor, and inspection services during construction. The project, including construction, was completed in November 2013.

Woodmont Properties – Capitol Logistics Center, Lower Swatara Township, Dauphin County, PA – Mr. Sapen served as the Project Designer for the reconstruction of over 640,000 square feet of warehouse space. The project involved preparation of construction plans for the demolition and reconstruction of warehouse facility, raising the floor elevation of the buildings by two feet, regarding truck court areas, providing trailer parking, evaluating tractor trailer turning movements, and stormwater and erosion and sedimentation control design along with NPDES permitting. The plans for the facility were completed in January 2014.

AMP, Inc., Lower Swatara Township, Dauphin County, Pennsylvania - Mr. Sapen was Project Manager for the preparation of Site Development Plans, Subdivision Plans, and Highway Occupancy Permit Plans for a new two-story 180,000 square feet building and 600+ parking spaces on a 68-acre tract of land. Associated activities included obtaining a Highway Occupancy Permit for the widening of approximately 2000 feet of a state road to accommodate a center turn lane, curbing, stormwater management, and the addition of a traffic signal at a nearby intersection. The comprehensive range of services provided for the project included surveying, stormwater management design, erosion and sedimentation control planning, wetland investigation, groundwater monitoring, geotechnical investigation, and preparation of construction specifications. Construction inspection and monitoring were also provided for this project.

MGB Enterprises, Harrisburg, Pennsylvania – Mr Sapen provided surveying and engineering services for development of a building expansion on a 14.5± acres tract of land on the western side of East Hanover Township. The primary objective of the project for Skelly and Loy was to obtain land development approval and erosion and sedimentation control approval for the addition of 119,800 square feet of warehouse to the already existing 60,000 square feet of warehouse and 3,200 square feet of office space. The project involved a topographic and boundary survey of the site and surrounding area. The Land Development Plans included site layout of the building, employee parking, trailer maneuvering, and a separate trailer storage area for twenty trailers, stormwater design, on-site septic system design with septic and dose tanks, and erosion and sedimentation control design. Due to the size of the expansion of building and pavement on-site, stormwater was a major concern for the approving agencies since the site is primarily in a residential area. Therefore, the project included the design of three separate stormwater basins for the control of stormwater from the site. A landscape plan was also prepared by Skelly and Loy which primarily involved screen planting from the neighboring residential areas and the State Road. The erosion and sedimentation control plan required approval from the Dauphin County Conservation District. Skelly and Loy presented the plans to the East Hanover Township Planning Commission and the Board of Supervisors.

BRENT A. SAPEN, Civil Design Specialist

ALBERT J. BUDINSKY, Civil Designer

EDUCATION:
B.S. Engineering of Mines, 1986, West Virginia University

YEARS OF EXPERIENCE:
28 Years

Mr. Budinsky has a variety of mining assignments, including due-diligence investigations, surface and underground mine planning, geologic investigations, and permitting. He also provides engineering support for drainage and stormwater management, potable water and sanitary designs, construction cost estimates, and bid-proposal preparation. He has an extensive computer background and has developed many plans using AutoCAD, Land Development Desktop, and SurvCADD as well as various hydrology packages.

PROFESSIONAL EXPERIENCE

Senior Designer - MEPCO Mine Dewatering Project, Greene County, Pennsylvania - Prepared and coordinated NPDES permit documents for 12,000 feet of pipe. Provided CADD support, developed the erosion control plan and worked with wetland specialists to minimize the impact of crossing several sensitive areas within the project area. Organized and adjusted survey information collected for the project.

Senior Designer - Keystruct Office Building and Addition, Harrisburg, Pennsylvania - Prepared project overall stormwater management and erosion control plans. Assisted in plan preparation that included grading, storm sewer design, and site layout. Assisted in obtaining approvals from the Dauphin County Conservation District and Susquehanna and Lower Paxton Townships.

Project Manager - DBT Data Technology Center, Harrisonburg, Virginia - Worked with in a multi disciplined team including architects, mechanical engineers, and electrical engineers to obtain approvals for an Internet service hub planned for a vacant building previously owned by Tyco/AMP. Skelly and Loy had detailed information of the site from work performed for Tyco. The land development involved close coordination with all members of the design build team. Skelly and Loy also provided construction coordination and is working on additional phases of the project. The work was performed by Total Site Solutions in Columbia, Maryland.

Senior Designer - Camp Hebron, Halifax, Pennsylvania - Performed hydrological analysis on the potential stormwater impacts for a minor building replacement at a church campground. Worked with local and PA DEP officials to quickly obtain approvals to meet approaching summer camping and activities season.

Senior Designer - Belco Credit Union - Performed various tasks to obtain approvals for several Belco Land Development projects in Harrisburg, Carlisle, and Gettysburg, Pennsylvania. Presented conceptual layouts to township planning commissions and assisted in final land development plan preparation.

Senior Designer - Keyser's Ridge Leachate Removal System, Garrett County, Maryland - Assisted in conceptual design phases and final plan preparation, developed CADD drawings, and performed

quantity takeoffs for project cost estimate. Interpreted and corrected site topography mapping from survey data provided from another firm.

Senior Designer - Mt. Pleasant Homes Land Development, Harrisburg, Pennsylvania - Strived with City officials and Tri-County Housing Development Corporation to develop a unique land development plan of a declining residential area while meeting the city's stringent environmental and zoning requirements. Quickly designed, addressed comments, and obtained approvals from City Council. Skelly and Loy has worked on several other successful redevelopment projects in the City for Tri-County.

Senior Designer - Good Spring South Mine Transfer Permit, Schuylkill County, Pennsylvania - Developed reclamation and mining plan which included project phasing analysis, stream restoration, erosion and sediment control plan, and permit application preparation. Performed volumetric computations for bonding calculations and utilized county GIS data to prepare property owners' mapping used for various aspects of the project.

Senior Designer - Grubb Subdivision , Derry Township, Dauphin County, Pennsylvania - Developed stormwater management plan and narrative to meet Township's challenging stormwater ordinance. Worked with other team members to develop erosion and sediment control plan and site and utility layout.

Senior Designer - TYCO Hamilton Street Facility, Carlisle, Pennsylvania - Made recommendations and provided a feasibility study to address an existing stormwater problem at the existing plant. One alternative involved a low impact wetland with landscaping of native plants to provide a functional yet attractive amenity to the site.

Senior Designer - Don's Performance Center , Swatara Township, Dauphin County, Pennsylvania Developed stormwater management plan and narrative which addressed Act 167 plan requirements for Beaver Creek while maximizing the developable space for expanding an existing building foot print, Addressed Karst geology in the stormwater design.

Senior Designer - SVC Acid Mine Drainage Remediation, Sequachtie County, Tennessee Provided construction management for plans prepared in the office by Skelly and Loy engineers for renovations to acid mine treatment facilities. Assisted in well monitoring activities and coordination of sludge removal utilizing Geotubes and polymer additives. Made field recommendations for drainage and road construction ongoing at the site.

Senior Designer - Good Spring East Coal Ash Placement and Monitoring Plan, Schuylkill County, Pennsylvania – Developed mine reclamation and erosion control plans for Pa DEP module 25 permit submission. Collected field information pertaining to flow and monitoring data at the site's monitoring wells to be incorporated into the overall site monitoring plan.

Senior Designer - Rausch Creek Land Planning Mapping, Schuylkill County, Pennsylvania – Analyzed GIS and site information to prepare a series of maps for client which highlighted coal, water and wind resources. Ten large size maps were developed and accompanied with a general narrative which discussed potential uses for the 12,000 acre tract.

DANIEL J. JOHNSTON, Senior CAD Designer

EDUCATION:
Continuing Graphic Design Degree

YEARS OF EXPERIENCE:
22 Years

Mr. Johnston has worked for Skelly and Loy for 21 years as a CAD Designer. His exceptional computer aptitude allows Skelly and Loy to diversify his knowledge among all types of computer applications. He is experienced in all CADD platforms as well as in most graphic software applications. He is proficient with Civil 3D, Carlson Civil and Mining, InRoad Design, AutoCAD, and MicroStation. Mr. Johnston is accustomed to applying his knowledge to overcome challenges presented by client demands. He is experienced in compiling and updating Planimetric and Topographic databases from orthophotography, and LIDAR. In addition to his CAD technical skills, Mr. Johnston is extremely knowledgeable in many of the ESRI GIS products.

PROFESSIONAL EXPERIENCE

Viewshed Analysis and Computer Rendering - Mr. Johnston is responsible for collecting and organizing project data and building the computer model for viewshed analysis for major infrastructure and development projects. He uses the latest software and technology in the industry.

- **Photographic Computer Renderings -** Project photographs of very important viewsheds can be modified to incorporate the proposed design. These illustrations are valuable for communicating the true impact of a proposed design to a viewshed. Mr. Johnston can also develop illustrations that require complete background reconstruction of the viewshed, which usually requires several photographs from different angle and positions. The photographs are then pulled apart and repositioned to proper angle and perspective for the final illustrations.

- **3D Computer Model Renderings -** For some projects a 3D computer model is required for the viewshed analysis. This type of model allows a complete 360° view of the project area plus the proposed project design. Mr. Johnston incorporates the CAD data from the design team and supplements the surrounding areas by incorporating GIS data (including DEM data). Once the model is built still images can be generated for any view for paper production and a computer animation file can be generated for replay on computer, web, or DVD. The animation may be a flyover of the site or follow a certain corridor path like a road, transmission line, or trail.

Project Mapping Coordinator - Mr. Johnston is responsible for organizing and cataloging various layers of project information. His coordination of projects allows seamless development of work between GIS Specialists and CADD Operators. This ensures quality control of data that is being developed in an organized and speedy process.

- **Central Susquehanna Valley Transportation Project - PennDOT -** The proposed highway was developed to cross Snyder, Union and Northumberland Counties. Mr. Johnston was in charge of all CADD file development and GIS integration. The project required development of approximately 60 different environmental constraint features, which were incorporated into GIS layers for impact analysis. Due to the large size of the study area, there were several different base mapping structures developed to present information at public events and in the project NEPA documents as clearly and accurately as possible.

- **Mining Permits - Mining Client in Central United States -** The client has several mining operations which require permitting for either new development or expansion of current operations. Mr. Johnston was directed to acquire, develop, and organize mapping from various available public or private sources. He uses the raw information and develops a uniform mapping appearance that met governmental permit requirements.

DANIEL J. JOHNSTON, Senior CAD Designer

- **Complete Design Packages - Various Clients -** Mr. Johnston's experience with CADD and various engineering software allows Skelly and Loy to develop complete sets of engineering packages, ranging from 15 to 60 different plan sheets per package.

Data Analyst - Mr. Johnston is a key person in developing different methods of data analysis for our engineering and environmental staff. His ability to integrate multiple computer applications allows him to develop new methods for old problems.

- **Valley Subsidence - Mining Client in Virginia -** Our client requested that we prepare subsidence mapping for an old gypsum mine. This mine consisted of 14 main levels with several offshoot sub-levels. Mr. Johnston, in coordination with other in-house GIS specialists, developed a model that accounts for existing terrain, sloping angle of existing subsidence, and elevations of individual levels. This model is capable of predicting future subsidence with a reasonably accurate location. Our GIS model was used to calculate and catalog all the affected items in the study area, which allowed our engineers to determine a cost of potential liability for our clients.

- **Coal Refuse Analyst - Coal Processor in Australia -** Our client requested Skelly and Loy to evaluate and determine if a coal refuse pile was suitable for power generation. Mr. Johnston was responsible for collating drill holes and surface sampling information. The uniqueness of the problem was that the hole depths varied depending on the locations of the hole on the pile. He developed a 3D model that illustrated the location of quality coal deposits and was able to generate volumes of these deposits.

- **Corridor O Project Potential Subsidence - PennDOT -** The proposed highway would connect State College to Interstate 80. Our engineering staff collected large amounts of mining data from various sources. Mr. Johnston, along with our GIS Specialist, and our engineering staff developed a method that accounted for all of the information collected. Mr. Johnston's role in the process was to develop a methodology to identify potential subsidence zones that were acceptable to our engineers and GIS Specialist.

- **Volumetric Analyst - Various Clients -** Mr. Johnston is capable of calculating volumes of materials of all types. His ability to apply software applications beyond their original designated use allows Skelly and Loy to determine numerous types of material volumes.

Graphics Coordinator - Mr. Johnston is responsible for coordinating all graphics for agency and public involvement activities. Graphics range from designing meeting displays to managing a dual-screen computer projection for meeting presentations.

- **Central Susquehanna Valley Transportation Project - PennDOT -** Mr. Johnston was responsible for developing a digital version of both the draft and final Environmental Impact Statements. The digital version was constructed using a web-based format that allowed distribution of the document on a compact diskette. This version also enabled the Environmental Impact Statements to function as searchable documents. As part of the project, Mr. Johnston also developed a 3D Animation of a proposed bridge overpass near a group of concerned citizens, and developed several before and after photographs of impacted view sheds in the study area.

- **Long Term AMD Treatment - Mining Client in Tennessee -** Mr. Johnston developed a valley dam to hold water for a low maintenance AMD treatment system. As part of the design process, earthwork volumes and incremental water volumes were calculated at different elevations. The client then directed us to produce a five-minute 3D animation showing what the potential lake would look like after completion. This animation was used to explain the idea to the client and other environmental state and federal agencies for approval.

- **Mining Permit - Mining Client in Central United States -** As part of the permit process, our client was required to have a public meeting. Mr. Johnston developed a 3D rendering of the proposed reclamation for this site. This rendering demonstrated alternative use of the property after the mining operation was completed.

- **Interstate 81, PA Exit 17 - PennDOT -** This proposed exit reconfiguration required impacting several historic farms in the area. Skelly and Loy was directed to develop a public display illustrating the history of farming in the area as mitigation for the impacted farms. Mr. Johnston created and produced the display, which incorporated historic maps, photos and text. The board is on display at the welcome center along Interstate 81 near Chambersburg.

DANIEL J. JOHNSTON, Senior CAD Designer

BRADLEY S. REESE, Geographic Information Systems Analyst

EDUCATION:
B.A., Urban Planning, 2004, University of Pittsburgh

RELEVANT TRAINING:
Professional Accreditation MicroStation V8i

Bentley Institute - 32 Learning Units

The American Institute of Architects - 32 Continuing Education Learning Units

YEARS OF EXPERIENCE:
10 Years

Mr. Reese has ten years of experience in the engineering and environmental consulting profession in both the public and private sectors in five states. He performs a variety of roles for Skelly and Loy including Geographic Information Systems (GIS) analysis and development; computer aided design (CAD) using Bentley MicroStation; and management and maintenance of the network, computer, phone, and production systems in the Pittsburgh office. Proficient in ESRI and Bentley Systems Incorporated software, he produces mapping for projects and provides analysis of existing data. Mr. Reese also has experience with website design. He also excels in document control, field survey logistics, and data collection. Mr. Reese's previous experience includes transportation planning, municipal planning, socioeconomic analyses, assisting in environmental document preparation and editing, and attending and assisting with public meetings and agency field views. Mr. Reese has also worked as a field investigator on a variety of historic resource surveys.

PROFESSIONAL EXPERIENCE

Geographic Information Systems - Mr. Reese is proficient in ESRI software and has developed, analyzed, and formulated data into GIS to develop figures for planning projects that include portraying project locations, neighborhood settings, land usage, zoning, park facilities, trail networks and hazards, invasive species control, and recommendations for improvements. He has produced hundreds of GIS mapping and graphic-related items.

Computer Aided Design - Mr. Reese daily uses Bentley MicroStation, CorelDraw Graphics Suite, Adobe Systems software, and the Microsoft Office Suite. His deliverables include mapping and figures of field surveyed wetland and stream sample point locations according to GPS coordinates, archaeological surveying and testing sites according to grid coordinates, profiles and plan views of archaeological sites, soil profiling, historic site plans and building floor plans, plan views delineating hazardous waste sites, and others.

Information Technology - Mr. Reese is responsible for the IT systems management and maintenance of the Pittsburgh office of Skelly and Loy. This includes employee computer systems, network servers and systems, phones, and reproduction systems (copiers and printers). He also serves as the IT help desk, assisting colleagues with resolving hardware and software problems.

Environmental Planning (Transportation and Municipal) - Mr. Reese's previous experience included assistance with several planning studies for local communities aimed at improving various aspects of municipal services and local quality-of-life issues, as well as highway and public transit projects. His work has included feasibility studies, corridor analyses, transit studies, and capital improvements programming. Mr. Reese has assisted with the preparation of several NEPA documents for large- and intermediate-sized projects. He has contributed to public involvement efforts for large transportation improvement programs and participated in public meetings and public hearings.

Relevant Projects - A few projects in which Mr. Reese has been involved in as principle CAD and GIS operator include: Mon/Fayette Expressway, Route 51 to I-376 project; City of Pittsburgh South Side Park Greenspace Management Plan, Indian Creek Valley Hike-Bike Trail Feasibility Study, where he also served as principal planner; NYSDOT Route 531 Farmland Analysis; US Route 220, I-68 to Corridor H Improvement Study; Rock Run Recreation Area Master Plan, where he produced all graphics relating to public meetings; SR 0062 Traffic and Land Use Study; City of Altoona Transportation Improvements Project; Delaware's Western Parkway; and the Pennsylvania Turnpike Determination of Eligibility.

DENNIS R. BELL, JR., P.G., Senior Geologist

EDUCATION:
B.S., Geology, 1984,
University of Kentucky

PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS:
Professional Geologist, PA, KY, AL, NC, IN

RELEVANT TRAINING:

OSHA Certified for Hazardous Waste Site Activities

American Red Cross First Aid and CPR

OSHA 40-Hour Hazardous Waste Operations and Emergency Response

Civil and Engineering Course Work, Tri-State University, Angola, IN

YEARS OF EXPERIENCE:
38 Years

During the past 38 years, Mr. Bell has acquired expertise in coal and non-coal property reserve estimates and valuations; conducting geologic site investigations, highwall/slope stability analysis, interpretations, and aquifer identifications; developing core drilling and sampling programs; geophysical log interpretations; regional groundwater assessments; anthracite culm/silt bank evaluations; report preparation; geologic field mapping; computer- generated isopach/isopleth map development; comprehensive environmental mining permit preparation; surface and groundwater sampling schedules and sample collection techniques; geologic sampling procedures; assessment of material acid-based accounts; evaluation of environmental hazards associated with mining activities; assessment of the potential for acid mine drainage development from spoil materials deposited on mine sites; project management; and providing expert testimony for clients on a variety of several litigation cases.

PROFESSIONAL EXPERIENCE

As a Senior Geologist, Mr. Bell has been Principal Investigator on numerous coal and Non-coal mineral reserve assessments throughout the United States. His has also completed studies in all of the major coal producing basins within the United States as well as in Northern Turkey, New South Wales, Australia and in the Latrobe Valley, Victoria, Australia. He has worked extensively in the Pennsylvania Anthracite and Bituminous coal fields. His geologic duties have included: the design and supervision of drilling programs to gather confirmatory coal thickness data, coal quality information, and roof and floor stratigraphy; review and confirmation of existing drill data and electronic geophysical logs; confirmation of in-place reserve quantities; coal and non-coal quality assessments; development of site geologic structure and stratigraphic mapping; mineral valuations, and development and implementation of additional exploration activities. He has recently completed reserve confirmation project assignments utilizing the Geological Survey of Canada “Paper 88-21” standards and is knowledgeable of “National Instrument” NI 43-101 document requirements and preparation.

In addition to his geologic duties, Mr. Bell also coordinates the preparation and review of many Coal and Non-Coal Surface Mining Permit Applications prepared by Skelly and Loy's engineers. Through years of experience, Mr. Bell has gained understanding of the regulatory requirements of the mining industry.

Mr. Bell also completed numerous groundwater assessment investigations associated with both active and abandoned mining operations. His duties have included: installation of monitoring wells; aquifer identification; determining the direction of groundwater movement; and conducting aquifer pump tests. He has written several reports determining the probable hydrologic consequences due to

DENNIS R. BELL, JR., P.G., Senior Geologist

surface disturbances on water quality within a specific watershed. He has used aerial photo interpretation, literature reviews, field reconnaissance, and computer modeling.

In 1980, Mr. Bell became a member of the team created to identify and locate all hazardous abandoned mine lands within the state of Kentucky. His duties as such included the collection of existing data, aerial photo interpretation, and mapping and describing areas while in the field. These efforts involved more than thirty projects.

Prior to Mr. Bell's full-time employment with Skelly and Loy, he was a co-op intern at the Harrisburg, Pennsylvania office. He was exposed to both environmental and engineering aspects of the surface mining industry. One engineering project which he became involved in was to determine the stability of hollow fills. His primary responsibility was to identify the sampling locations and to monitor the sampling procedure conducted at each hollow fill selected for the study. Upon completion of sampling, he performed the following laboratory analyses on each sample: Natural Water Content; Unit Weight Determination; Sieve Analysis; and Direct Shear Tests.

Mr. Bell was also part of the project team which completed a demonstration project for the Bureau of Mines which included the identification and mapping of all abandoned mine lands in three Appalachian counties. His duties included: background data collection; preparation of area wide land use maps; ground reconnaissance; surface water sampling to identify streams polluted from AMD within the three- county study area; and final report preparation.

PUBLICATIONS

"Assessment of Anthracite Culm/Silt Material for Fluidized Bed Cogeneration" presented at the Pittsburgh Coal Conference, September 1986 (co-author)

PROFESSIONAL AFFILIATIONS

Pennsylvania Aggregate and Concrete Association
Pennsylvania Council of Professional Geologists (PCPG)

DENNIS R. BELL, JR., P.G., Senior Geologist

EDWARD M. LESNY, P.E., Consulting Geotechnical Engineer

EDUCATION:
B.S., Civil Engineering, 1962, The Pennsylvania State University

PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS:
Professional Engineer, Commonwealth of Pennsylvania, 1967

Professional Engineer, State of Maryland, 2004

SHORT COURSES:
Impoundment Inspection: Mining Enforcement and Safety Administration

Underground Coal Mining, An Overview: The Pennsylvania State University

Fundamentals of Rock Mechanics: The Pennsylvania State University

Design and Analysis of Railroad Tracks Program: Princeton University

Training Course for the Use of Nuclear Testing Equipment: Troxler Electronic Laboratory, Inc.

YEARS OF EXPERIENCE:
53 Years

Mr. Lesny has a total of 53 years experience in the geotechnical aspects of numerous projects. He also has pre-graduation experience gained through employment with a geotechnical engineering consultant.

Mr. Lesny has been involved with the following types of projects:

- High and low-rise buildings
- Bridges
- Dams
- Soil and Rock Cut Slopes
- Waste Treatment Plants
- Embankment Stability
- Quarry Permits
- Warehouses
- Highways
- Retaining Walls
- Pavement Design
- Sinkhole Repairs
- Waste Disposal Permits
- Reclamation Plans

These projects included the design and/or construction employing the following:

- Spread footings
- Caissons
- Underpinning
- Structural fills
- Rock anchors
- End bearing piles
- Shoring
- De-watering
- Blasting
- Friction piles

PROFESSIONAL EXPERIENCE

Over the last six years, Mr. Lesny has been employed by several consultants, on a part time basis, to inspect the work performed by drilling contractors. The subsurface investigation work was associated with commercial projects and county or township bridges.

Slope Stability Analysis - Mr. Lesny's experience with respect to slope stability dates to 1964, when computer programs were not available. He performed the analyses using a combination of graphics and a handheld or desktop calculator. The process was tedious and several hours were spent doing the calculations for one failure arc. He performed such analyses for highway embankments situated over deep glacial deposits located in western and northern Pennsylvania.

With the passing of time, Mr. Lesny learned to use the computer programs which became available. The early programs were not user-friendly and preparing the input for complex dam embankments was challenging.

The following enumerate Mr. Lesny's slope stability analysis experience by category.

PROJECT EXPERIENCE

Earth Dam Design Projects

Old Ben Coal Company - As a project engineer with Skelly & Loy of Harrisburg, Pennsylvania, Mr. Lesny was in charge of analyzing the subsurface conditions at two large coal slurry ponds to determine if the embankments could be heightened to increase storage capacity.

Sunbury Fly Ash Basin - This project involved the testing of soil and fly ash samples for Pennsylvania, Power and Light Company to provide data to their engineers to analyze if was possible to raise the height of a major fly ash

EDWARD M. LESNY, P.E., Consulting Geotechnical Engineer

storage dam. Mr. Lesny assisted in the slope stability analysis

Brunner Island SES - Mr. Lesny provided geotechnical engineering services and developed a soil testing program for the design of Ash Basin Nos. 6 and 7 at the PP&L, Brunner Island, Steam Electric Station. Upon completion of the testing, he analyzed the stability of the proposed containment structure.

Camp Small Valley - Camp Small Valley is a girl-scout camp located in northern Dauphin County, Pennsylvania. Mr. Lesny prepared the investigation and soil testing programs for this dam. His work on the design included analyzing the slope stability and providing data for the prime consultant to incorporate in the design.

Silver Creek Reservoir - This project was completed with Mr. Lesny's partner, Philip C. Kitlinksi, P.E., and included the re-design of an earth water supply dam declared unsafe by PADEP Division of Dam Safety. The work required performing numerous slope stability calculations because of the configurations studies.

East Stroudsburg Water Supply Reservoir - The East Stroudsburg dam was declared unsafe by the PADEP Division of Dam Safety. Mr. Lesny was engaged by the prime consultant to assist in analyzing the test boring results and prepare the slope stability analysis.

Highway Design Projects

U.S. Route 322, Port Matilda to Philipsburg, Pennsylvania - Mr. Lesny analyzed the cut slopes for this project by plotting the bedrock geometry on stereonets. To perform the analysis, he researched the geology of the area and reviewed the results of the core borings drilled to investigate the roadway alignment. The goal of the study was to determine if pre-split blasting could be used to steepen the slopes and reduce the potential waste.

Section A-12, S.R. 0015, Williamsport, Pennsylvania - The analysis of the test borings data accumulated by the PADOT District 3-0 office over a period of several years, and the preparation of the geotechnical engineering report for Section A-12 of S.R. 0015, north of Williamsport, Pennsylvania. The work included the analysis of several deep cuts using stereonet analyses and the analysis of several sliver fills using a computer program for a sliding block failure. This work was performed under a open end contract with District 3-0 and the highway design was completed by District personnel.

U.S. Route 322, Lewistown Narrows - In June of 1992, Mr. Lesny participated in the study of the widening of the Lewistown Narrows. This section of roadway located in Mifflin and Juniata counties forms one of the last bottlenecks along U.S. Route 322 between Harrisburg and State College. The recommendation made in the Soils and Geologic Reconnaissance Report was to have the roadways separated by mechanically stabilized walls such as the patented Reinforced Earth Wall. The Lewistown Narrows area has been investigated several times and the conclusion is that the existing talus slopes must not be disturbed otherwise catastrophic slope failures could occur. The design proposed by Larson Design Group would accomplish widening of the roadway with no impact on the existing slopes covered with rock rubble.

PA Route 45, Spring Mills, Pennsylvania - As a part of an open end contract with the PADOT District 2-0 office located in Clearfield, Pennsylvania, Larson Design Group was assigned the task to design the widening of Pennsylvania Route 45 immediately east of the town of Spring Mills, in Centre County. At this location the roadway and its narrow shoulders followed a sharp curve through a deep rock cut that impaired the sight distance. Vehicles traveling at high speeds had difficulty negotiating the curve and numerous accidents occurred. Mr. Lesny developed a test-boring program to investigate the rock cut and applied stereonet analysis to the geometry of the rock to determine the most suitable slope for the rock cut. His recommendation was to put the natural bedding planes of the rock to control the direction of benching of the slope and eliminate the potential for massive slides. The construction of the widening has been completed and the benching technique recommended has resulted in an attractive, stable slope.

S.R. 0015, Tioga County, Pennsylvania - Mr Lesny analyzed the geotechnical data for the design of the Mansfield By-Pass, Section E-61 of S.R. 0015 and section F-12 of S.R. 6015, located to the north of Mansfield. The work included analyzing the widening of fills and cuts, the evaluation of storm water detention ponds, studying the use of conventional spread footings to support bridge abutments. The significant challenge associated with the project is

EDWARD M. LESNY, P.E., Consulting Geotechnical Engineer

proving that the slide that occurred in 1976 as a result of the construction of the nearby Tioga-Hammond Dam is safe. Mr. Lesny utilized the PCSTABL computer program to perform the slope stability of the embankment slopes associated with the project.

Landfill and Flyash Disposal

Throughout his career Mr. Lesny has provided geotechnical services to consultants requiring slope stability analyses of landfills and fly ash disposal facilities.

Steelton-Highspire Class III Demolition Waste Landfill - This project included preparation of the permit application and plans for the expansion of an existing landfill. The landfill is located near the Steelton-Highspire High School and includes an area of 3.5 acres. In addition to the design of the landfill, certification of the construction at various stages was also performed.

Harrisburg Incinerator Waste Area B-2 - The work performed at the site of the B-2 waste area included the excavation of test pits to identify the soil and collect samples for laboratory testing. Soil classification, soil compaction and permeability tests were performed as a part of the permit application. Engineering services provided included the stability analysis of the slopes of the containment embankment and the evaluation of the bearing capacity of the soil/rock that would support the landfill.

Harrisburg Incinerator Waste Area B-3 - In 1994, Mr. Lesny performed the stability analysis and bearing capacity analysis for the B-3 waste disposal area as a sub-consultant to Brinjac-Kambic of Harrisburg.

Clinton County Landfill, Clinton County, Pennsylvania - As a sub-consultant to the firm of Cummings and Smith of Lewisburg, Pennsylvania, Mr. Lesny provided soil-testing services to evaluate soil which was to be used as attenuating soil base in a construction/demolition waste landfill. The testing included grain size, standard compaction and consolidation tests. The purpose of the testing was to determine the change in the permeability of the soil with an increase in load simulating the load due to the landfill.

Rock Run Fly Ash Disposal Pit, Tioga County, Pennsylvania - Mr. Lesny performed slope stability analyses for the permit application at this site for the firm of Walter W. Kaufman Associates of Camp Hill, Pennsylvania. The primary containment for the fly ash is a former coal strip mine in north central Pennsylvania. The final height of the fill above the surrounding ground surface was approximately 60 feet.

Mine 24 Fly Ash Disposal Site, Cambria County, Pennsylvania - The Mine 24 Fly Ash Disposal Site is associated with several coal fired co-generation plants. The final design height of the pile for which we performed slope stability analyses is 250 feet. This work was performed for RNS Services through Walter W. Kaufman Associates.

Greentree Landfill, Jefferson County, Pennsylvania - Mr. Lesny was retained by Blazosky Associates, Inc., in 1992, to perform a slope stability analysis for the Greentree Landfill in Jefferson county to satisfy the requirements of the Department of Environmental Protection.

Federal Mine No.1 Fly Ash Disposal Site, Granttown, West Virginia - At the request of Ross Consulting Engineers, Mr. Lesny performed a slope stability analysis for the Federal Mine No. Fly Ash Pile which is to be constructed of fly ash generated by a nearby co-generation facility. The analysis was part of the permit application submitted to the West Virginia Department of Natural Resources.

Antrim Construction/Demolition Landfill, Tioga County, Pennsylvania - The slope stability analysis for the Antrim Construction/Demolition Landfill is Mr. Lesny's most recent project in the area of demolition waste disposal. He completed a detailed slope stability analysis in February of 1996.

Robindale Energy, Johnstown, Pennsylvania - Mr. Lesny is currently performing soil tests to certify the suitability of the on- site soil for liner construction for a fly-ash disposal site that will cover 180 acres. He has also performed a slope stability analysis of the proposed ash pile.

EDWARD M. LESNY, P.E., Consulting Geotechnical Engineer

Quarries

Mr. Lesny has completed stereonet analyses of the following quarries. The stereonet analysis is a graphical procedure for analyzing the safety of the high-walls based on the orientation of the bedding planes and joint system. The result does not yield a specific factor of safety. Its purpose is to reveal whether there are bedding and joint planes that are potentially un-stable.

Such analyses have been performed for the following quarries:

- HANSON, Penns Park Quarry, Bucks County, Pennsylvania
- HANSON, Downingtown Quarry, Chester County, Pennsylvania
- HANSON. Glen Mills Quarry, Chester County, Pennsylvania
- Eureka Stone Quarry, Chalfont, Pennsylvania
- Warrington Quarry, Warrington, Pennsylvania
- Rushland Valley Quarry, Rushland, Pennsylvania

EDWARD M. LESNY, P.E., Consulting Geotechnical Engineer

THOMAS R. JOHNSTON,

Assistant Vice President, Harrisburg Environmental Services

EDUCATION:
B.S., Biology, 1983, Shippensburg University

A.A., Biology & Chemistry, 1981, Harrisburg Area Community College

PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS:
U.S. Army Corps of Engineers, Baltimore District Wetlands Delineator Certification

U.S. Fish and Wildlife Service HEP Certification, 1987

U.S. Fish and Wildlife Certification in Principles and Techniques of Electrofishing, 1994

PROFESSIONAL AFFILIATIONS:
American Fisheries Society

Pennsylvania Association of Environmental Professionals

Society of Wetlands Scientists

YEARS OF EXPERIENCE:
31 Years

As Assistant Vice President for Natural Resources at Skelly and Loy, Mr. Johnston is responsible for the coordination of ecological and regulatory services conducted out of the main office in Harrisburg. Over the past several years, he has been involved in a wide variety of projects ranging from wetlands investigation to aquatic sampling to terrestrial habitat modeling. Mr. Johnston is involved in all facets of biological projects including field data collection, data analysis, report generation, and project management. In the past six years, he has managed more than 75 projects that have included both specific wetland studies and general Environmental Assessments for a variety of government, utility, and private clients.

PROFESSIONAL EXPERIENCE

Permit Management & Feasibility Studies for Mining Projects - Mr. Johnston has recently been involved in a series of management planning and feasibility evaluation studies for a broad spectrum of complex mining and quarrying projects. The projects have included coal mines in the Appalachian, Illinois, and Powder River Basins; and quarries in the Mid West, East Coast, and Gulf Coast. Mr. Johnston's specialty is the integration of federal, state and local regulatory approvals into the mine development and permitting process, and proactively managing the approval process to reduce development cost and schedule. He regularly assists all types land development clients (including miners and quarrymen) by helping them "see how the big picture fits together" and avoid unforeseen delays and cost.

Wetland & Stream Permitting - Mr. Johnston has been involved in over 200 wetland projects throughout the East Coast, Mid West and High Plains states. In these projects, he has participated in the delineation of more than 3,000 individual wetland habitats using both the 1987 and 1989 methodologies. Much of this work has included delineation of problem area wetlands, disturbed wetlands, and farmed wetlands. Mr. Johnston has also been involved in the functional assessment of wetlands using the narrative descriptive method, the Adamus method, HEP and PAM HEP, and the U.S. ACOE WET 2.0 method. He regularly provides clients with regulatory interpretation of Section 404 Regulations of the Clean Water Act and the state 401 WQC Permit. Mr. Johnston also actively manages the preparation of Permit Applications prepared by Skelly and Loy with direct technical participation in the preparation of the 404(b)1 analysis.

Wetland Replacement Design - A large portion of Mr. Johnston's technical activities centers around the planning and design of replacement wetlands which are provided as compensatory mitigation for unavoidable wetland impacts. Mr. Johnston has conducted 22 wetland replacement design projects which included over 50 individual basin designs, totaling more than 120 acres of replacement wetlands. Throughout the course of these design projects, Mr. Johnston has developed several technologic methodologies which have become industry standards such as: methods of estimating hydrologic demand based on primary productivity, the use of concrete key spillways, and the establishment of backfill compaction specifications to promote natural revegetation.

Habitat Assessments and HEP Studies- Mr. Johnston has conducted or supervised numerous habitat assessments for a wide range of private and public development projects. The habitat assessments have been included in NEPA documents, 404/401 Permit Applications, ESA Biological Assessments, Master Planning Studies, and Habitat Management Plans. These studies have

included the U.S. Fish & Wildlife Service's Habitat Evaluation Procedures (HEP), Pennsylvania Modified HEP (PAM HEP), Anderson Land Use/Land Cover mapping assessments, Hydrogeomorphology (HGM), and community-specific assemblage-based assessments. Many of these 'classic' assessment tools have been updated operate on GIS interfacing digital platforms.

Public Outreach & Involvement - Mr. Johnston is routinely involved in public outreach programs associated with complex land development projects and regulatory review processes. He has been involved in public information meetings, steering committee meetings, stakeholder group meetings, special focus group meetings, and public hearings for public, private, and non-profit sector clients. Mr. Johnston specializes in the presentation of complex technical and planning data in plain language that allows public stakeholders to easily understand what a project will mean to them, their family, and their community. Mr. Johnston also routine and effectively practices a "De-NIMBYizing" technique called issue distillation. Over the past 20 years Mr. Johnston has made more that 50 public presentations for high profile and controversial projects in the Mid-Atlantic States.

Linear Projects - Much of Mr. Johnston's practice is associated with large scale linear projects such as roadways, railroads, pipelines and transmissions lines. He has coordinated the natural resources studies for: six major new interstate type highways in the northeast; five railroad reconstructions in the east and Midwest; two major interstate pipelines in the mid-Atlantic; and five major transmission lines (ranging from 5 to 75 miles and 38 to 50 kV). Mr. Johnston's most famous transmission line project involved the PA PUC and USACE authorization to reconstruct and 138 kV line thought the Tannersville Cranberry Bog, an internationally recognized unique peat land habitat owned by The Nature Conservancy.

NEPA Experience - Over the past 20 years, Mr. Johnston has managed and participated in a wide range of NEPA environmental studies associated with a wide variety of federal actions. The studies have been associated with U.S. DOT transportation projects, U.S. Army Corps of Engineers 404 Permits, FERC authorizations, OSM permits, and U.S. DOI mineral reserve leases. Mr. Johnston served as the Natural Resource Coordinator on the Joint NEPA-404 projected conducted by the Federal Highways Administration in the northeast. Most recently he severed as the environmental project manager of a Joint NEPA-404 Environmental Impact Statement for a 12 mile section of new Interstate Highways spanning two states. Mr. Johnston has been involved in over 100 individual projects which have involved NEPA studies and clearances.

Wetland Enforcement Action - Mr. Johnston has provided assistance in resolving numerous wetland enforcement actions brought by both the State and Federal governments. Many of these cases involved complex delineation and jurisdiction issues which were able to be resolved with voluntary compliance. He has provided expert testimony on a variety of wetland and ecological issues before the Pennsylvania Environmental Hearing Board, Commonwealth Court, Federal District Court, and a Federal Grand Jury.

Environmental Education Study Areas - Mr. Johnston has worked on several replacement projects that incorporated educational components into the design. These projects included the I-279 highway project in Allegheny County, Pennsylvania; the Fairfield School District in Adams County, Pennsylvania; the Susquenita School District in Perry County, Pennsylvania; and, a terrestrial site at the Whitetail Ski Resort in Franklin County, Pennsylvania. Mr. Johnston is currently working on the design of wetland replacement sites for the Warren Street Reconstruction Project in Berks and Lancaster Counties, Pennsylvania. This project involves two sites; one that will be developed for the Wyomissing Dark and the second for the Wyomissing School District. Both sites will be developed for use as environmental study areas.

Wetland & Environmental Instruction - Mr. Johnston has provided training services related to wetlands identification and permitting to numerous public and private clients including: PennDOT, the U.S. Army Corps of Engineers, and multi-national aggregate producers. He has also provided training related to environmental compliance related to regulated natural resource to PennDOT Construction and Maintenance Units. Mr. Johnston has developed two Environmental Handbooks for PennDOT related to Wetlands and Non-Regulated Natural Resources. Mr. Johnston has provided wetlands and permit compliance training for PennDOT in 1990, 1992, 1997, 2001, 2002, 2004, 2007, and 2008. In 2007 he facilitated a three (3) day training course related to 404-105 permitting for design, construction, and maintenance.

THOMAS R. JOHNSTON,

Assistant Vice President, Harrisburg Environmental Services

RELEVANT TRAINING

Aquatic and Fisheries Biology; Biostatistics and Computer Modeling, Shippensburg University
Wetland Identification and Delineation Training, Frank Plewa and Dr. Thomas Pluto, 1990
Identification of Hydric Soil, Shippensburg University, 1990
Wetland Identification and Delineation Training, Wetland Training Institute, 1989

PUBLICATIONS

- Section 404 Permitting of Coal Mines: Impacts on Supply. Training for Midwestern and Southeastern Public Utility Fuel Procurement Groups, 2010.
- Permitting of Coal Mines: Challenges & Impacts on Supply-Management Overview. Presentation to the American Coal Council, 2009.
- Section 404 Permitting of Valley Fills: What Now & What's Next? Presentation to the North Carolina Coal Institute, 2009.
- Environmental Mitigation Commitment Track (ECMT) Workshop. Training course conducted for the Pennsylvania Department of Transportation, 2009.
- Environmental Compliance During Construction (Chapter 105 & NPDES Compliance). Training course conducted for the Pennsylvania Department of Transportation, Engineering District 2-0, 2009.
- Chapter 105 GP Permit Condition Compliance. Training course conducted for the Pennsylvania Department of Transportation, Engineering District 8-0, 2008.
- 404-105 Permitting and Compliance Workshop (Design, Construction & Maintenance). Training course conducted for the Pennsylvania Department of Transportation, 2007.
- 404-105 Permitting Workshop "The Big Picture for Design". Training course conducted for the Pennsylvania Department of Transportation, 2006.
- FHWA & PENNDOT 404-105 Permitting Workshop. Training course conducted for the Pennsylvania Department of Transportation, 2002.
- Chapter 105 & Section 404 Permitting. Training course conducted for the Pennsylvania Department of Transportation, 1997.
- An Overview of the Dam Safety and Encroachments Regulation (Chapter 105). Training course conducted for the Pennsylvania Department of Transportation, 1992.
- Problems of Wetlands Mitigation. Advanced Technical Workshop, Chapter 105 Regulations and Permitting. Sponsored by Pennsylvania Environmental Consultants Technical Advisory Committee, 1992.
- Design Criteria for Wetlands. Pennsylvania Wetlands 1991: Focusing on the Issues. Sponsored by Pennsylvania Department of Environmental Resources and Shippensburg State University, 1991.
- Wetland Regulations and Development Issues. Pennsylvania Environmental Regulations Course. Sponsored by Executive Enterprises, Inc., 1991.
- Wetlands Mitigation Problems and Promise. Stormwater, Wetlands, and Floodplain Management Conference. Sponsored by Pennsylvania State University, 1991
- Engineering and Technical Problems of Wetlands Compensation. Presentation to Pennsylvania Engineers in Private Practice, 1990.
- An Overview of Wetlands Delineation and Regulation. Training Course conducted for the Pennsylvania Department of Transportation, 1990.
- Creating Artificial Wetlands Freshwater. Pennsylvania Wetlands: Preparing for the Decade of the Environment Conference Sponsor Pennsylvania Department of Environmental Resources, 1990.
- Small Mammal Exploitation of a ForestClearcut Interface. Acta Theriological., 30, 11: 211218, 1985.
- The effects of Rough fish removal on the growth and survival of Hatchery Brown trout (Salmo trutta) in Burd Run. American Fisheries Society International Symposium: "The Role of Fish Culture in Fisheries Management", 1985.
- Small mammal exploitation of forestclearcut interface during years of high and low abundance. The annual meeting of the Pennsylvania Wildlife Society, 1984.
- The effects of Rough fish removal on the growth and survival of Hatchery Brown trout (*Salmo trutta*) in Burd Run. The annual meeting of the Pennsylvania Association of State College and University Biologists, 1984.
- The ecology of small mammals exploiting the forest clearcut interface. The annual meeting of the Pennsylvania Academy of Science, 1983.

The State of West Virginia

STATE OF WEST VIRGINIA · MONTANI SEMPER LIBERI

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 W. 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 [redacted]

"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

GERALD W. LONGENECKER
SKELLY & LOY, INC.
449 EISENHOWER BOULEVARD SUITE 300
HARRISBURG, PA 17111

The State of West Virginia

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

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 [redacted]

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

Secretary

President

Search: Details

Name:	ROBERT E GOLKOSKY
WV Professional Engineer:	**PE License Number:** [redacted]
	PE License Status: Active
	PE Issue Date: 02/21/1995
	PE Expiration Date: 12/31/2016
WV Engineer Intern:	**EI Certification Number:** [redacted]
	EI Issue Date: 01/17/1994
Primary Address of Record:	[redacted]
Primary Employer of Record:	GRE MINERAL SERVICES, LLC 23200 FLEDGLING CIRCLE BRISTOL, VA 24202

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Skelly and Loy assembled a key personnel team with extensive experience, proven technical expertise, and educational background ideally suited to meet the needs of WV DEP under this contract. The following highlights specific areas of the team's relevant experience and expertise.

Mr. Gerald W. Longenecker, P.E. will serve as our Senior Manager/West Virginia Registered Professional Engineer. As Vice President and an Associate of the firm, Mr. Longenecker provides oversight, management and technical direction on the company's Engineering Group performed in its various multi-state office locations. A licensed Professional Engineer, Mr. Longenecker has 35 years experience in the engineering consulting field including 22 as an employee of Skelly and Loy. This experience has been gained through the management and technical participation in a broad range of projects including mine reclamation and mine drainage treatment, stream restoration, erosion and sediment control, watershed assessments, stormwater management, solid waste handling, industrial and sanitary wastewater treatment, dam safety, water resources engineering, and wetland-related evaluations.

Mr. Longenecker served as principle engineer and project manager on numerous active and reclaimed coal and non-coal mine sites throughout the Mid-Atlantic and Southern states regions. Project management responsibilities have included projects involving the development and oversight of geotechnical testing plans for embankment and slope stability and evaluating remedial measures. Technical project assignments have involved developing water management and site reclamation plans to stabilize sites and control/treat mine drainage. Assignments have involved the management and design of a mine drainage treatment system at a 1,500-acre coal mine. The project focused on the restoration of the impacted receiving streams and improving water quality sufficiently to support native aquatic life. Efforts included coordinating efforts to secure OSM phased bond release, performing water balances, hydrogeologic assessments, NPDES permit revision negotiations, evaluation and design of passive mine drainage treatment systems, and general permit coordination with the federal and state regulatory agencies. Following phased bond release for site stabilization, additional refinements for implementing passive mine drainage treatment are ongoing at the present time. Evaluated the economics and performance of chemical treatment and passive treatment systems used for treating degraded water quality at a reclaimed surface coal mine preparation plant. Primary drainage sources included a gob pile, slurry lakes, and upgradient abandoned mine lands. Other assignments have included mine pool pumping to control acid mine drainage seepage, passive and active (chemical addition) mine drainage treatment system design and NPDES permit negotiations for treatment system discharges. Mr. Longenecker has also made technical symposium presentations on the passive treatment of acid mine drainage.

Our designated Project Manager is Mr. Joseph E. Mills. Mr. Mills recently joined Skelly and Loy's Morgantown, West Virginia, office location following a long tenure with MDE's Mining Program. He earned a B.S. degree in biology from Frostburg State College. He gained extensive knowledge of mining, abandoned mine land reclamation, and acid rock drainage control and abatement during his 35 years of professional experience. Mr. Mills has designed and monitored construction of 15 active dosing systems and more than 50 passive mine drainage treatment systems. Additionally, he has been involved in the design, construction inspection, post-construction evaluation of 22 AML projects. During his time as a Mine Inspector, Mr. Mills was responsible for 34 surface mines, assuring that the daily mining activities met all State and Federal laws and regulation and that they were reclaimed to Approximate Original Contour and met the approved post-mining land use. He is familiar with of the Federal Surface Mining Control and Reclamation Act of 1977 (SMCRA), Maryland Mining Law Code of Maryland Regulations (COMAR), National Pollution Discharge Elimination System (NPDES), and Federal Clean Water Act (CWA) as they pertain to current mining practices.

Mr. Mills' extensive experience in planning, performance, and supervision of project assignments makes him an ideal choice to serve as Project Manager under this contract. Additionally, he routinely prepares project estimates and task schedules; reviews progress and evaluates results; and makes prudent

PROPOSED STAFFING PLAN

changes in methods, design, or equipment where necessary to keep projects on track. He operates with some latitude with minimal oversight regarding actions or decisions.

Mr. Timothy A. Denicola is our assigned Geologist/Scientist. Mr. Denicola has seven years of professional experience, a B.S. degree in chemistry from Clarion University of Pennsylvania, and an M.S. degree in geology from West Virginia University. He has a thorough background in geochemistry, geology, and hydrology gained through work on mine drainage research studies, management of mine drainage remediation projects, facilitation of a mine pool geotechnical study, and funding acquisition and management efforts for multiple projects. He managed administrative, educational, and outreach components for a non-profit organization focusing on watershed restoration. Mr. Denicola is ideally suited to assess mine water contamination issues, develop remediation plans, communicate with agencies regarding funding and permitting, and manage remediation project budgets.

Mr. Denicola's work experience and educational background provides him with technical expertise in planning, performing, and evaluating projects involving geologic and hydrogeologic issues related to coal mining. His areas of expertise include coal overburden acid-base accounting, groundwater chemistry, surface water chemistry, coal stratigraphy, and hydrogeology.

PROPOSED STAFFING PLAN

Middle Creek Gob Pile Reclamation Project
Cedar Bluff, Virginia

Client/Owner
Circle L Land Company, LLC

Estimated Project Value
Total: $150,000

Completion Date
March 2013

Key Components
Stream Crossing; Drainage Control; Thermal Energy Evaluations

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

Senior Project Manager
Mark Williams

Circle L Land Company owns coal rights to coal refuse in an area known as Middle Creek located near Cedar Bluff, Virginia. The site supported a coal processing plant many years ago and the rejected material from that operation was stockpiled on-site. This refuse/gob stockpile is planned as a reclamation and reprocessing project by Circle L Land. The operator will selectively reclaim the higher quality portion of the existing coal gob as fossil fuel. Skelly and Loy, Inc. has provided engineering services to Circle L Land Company to permit this reclamation project.

The Middle Creek site is made up of sloping terrain containing two significant coal refuse piles. Sampling and analysis of these gob piles indicate that significant BTU value and potential recovery of the energy available as a viable fuel will be cost-effective. In fact, the mining company has been able to secure buyers with the assistance of Skelly and Loy through our research and evaluation of material testing for the site.

A permit for reclamation of existing refuse piles is anticipated to be issued by the end of March 2013. Once that permit is approved, Circle L will immediately begin reclamation and reprocessing of this coal which is destined for the utility market. The value of the coal on this relatively small site of about 50 acres is in the multi-millions of dollars, and there are several customers interested in purchasing the desirable product.

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

- evaluating coal quality and recoverable quantity,
- establishing water sampling stations and parameters based on available data to reduce permit costs,
- developing drainage control for the site which could be readily 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. Our expertise has included providing necessary air quality permitting for an on-site screening plant. 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.

Virginia AML Refuse Reclamation and AMD Corrections at Pole Bridge Road
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

Senior Project Manager
Mark Williams

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 completed the design phase of this project February 28, 2013. Our staff provided a construction cost estimate to the Agency and assisted with selection of a qualified candidate to perform the work. We continued the project by making several site visits during the construction phase and advising Agency staff of suggestions when field conditions did not fully reflect predictions upon excavation of problem areas. The Skelly and Loy responsibilities concluded with our submission of a complete and thorough Engineering Report which captured all data and records requested in the original RFP.

Virginia AML management and supervisory personnel expressed complete satisfaction with the services that Skelly and Loy provided on this project.

Virginia AML Refuse Reclamation and AMD Corrections at Pole Bridge Road

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

Senior Project Manager
Mark Williams

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;

Red Ash Strip Mine and Gob Pile Reclamation Project

- 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

Senior Project Manager
Mark Williams

Skelly and Loy has performed engineering design and permitting services for R.H. Dotts Contacting, 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.

Government Financed Construction Contract (GFCC) AML Reclamation Projects

Armstrong Energy Comment Letter to PA DEP
Armstrong County, Pennsylvania

Client
Tenaska, Inc.

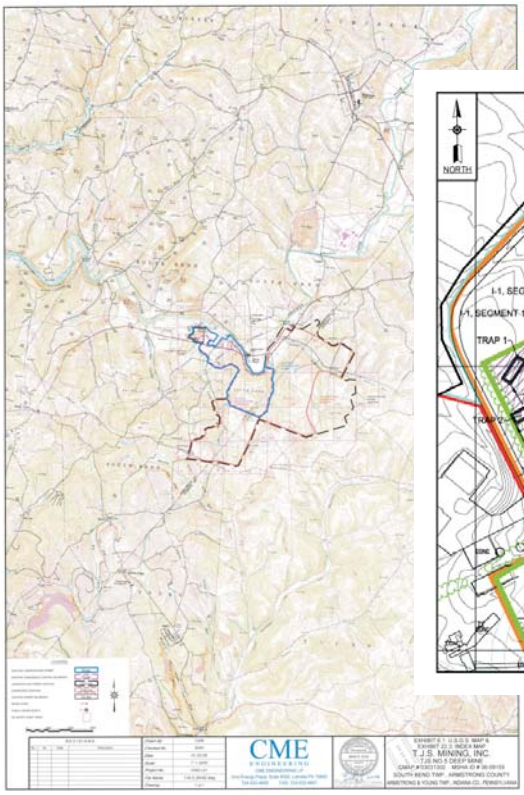
Estimated Project Value
Total: $12,000
Firm Responsibility: $12,000

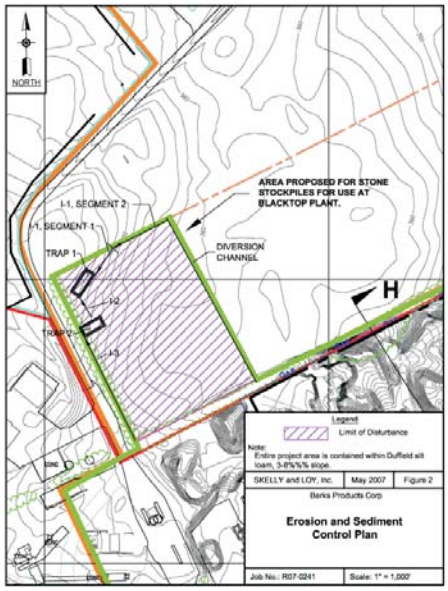
Completion Date
May 2008

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

Senior Project Manager
Mark Williams





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.

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

Senior Project Manager
Mark Williams

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.

Valley Point #12 Abandoned Mine Drainage Remediation Project

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

Senior Project Manager
Mark Williams

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

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

Senior Project Manager
Mark Williams

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 passive and semi-active 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, anoxic limestone drains,

Comprehensive Engineering, Environmental, and Permitting Services

and water-powered lime dispensing systems with storage silos. 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

Senior Project Manager
Mark Williams

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: $2,500,000
Firm Responsibility: $500,000

Completion Date
2004-Present

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

Reference Contact
Mr. David Thomas
P.O. Box 57
Defiance, PA 16633
P: 814-928-5253

Senior Project Manager
Mark Williams

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 15 passive AMD treatment systems to remediate 19 AMD discharges. These constructed passive treatment systems have helped to restore approximately three miles of Six Mile Run and nearly two entire tributaries known as Shreves Run and Brewster Holland.

The components of these 27 passive treatment systems included channel modifications to reroute discharges and/or offsite 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

Senior Project Manager
Mark Williams

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 Blacklegs 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 Blacklegs 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 Blacklegs 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 Blacklegs 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: $100,000

Completion Date
2003-Present

Key Components
AMD Passive Treatment System Design; Operations and Maintenance Services; OM&R Plan Development; Construction Inspection

Reference Contact
Mr. Louis Obradovich
Jeff Zell Consultants, Inc.
1031 4th Avenue
Coraopolis, PA 15108
P: 412-262-2022

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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 using 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.

TREATMENT SYSTEMS

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.

In the limestone pond used for treating the BP2 discharge, the

AMD passes through the high calcium carbonate limestone (typically greater than 80% CaCO3) 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 water 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 starting in 2003 to the present to perform operation and maintenance (O&M) checks and to ensure that all systems continue to function as designed. Skelly and Loy continues to perform O&M services including system flushing, water quality and flow monitoring and maintaining hydraulic structures.

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)	ALKALINTY (MG/L)	ACIDITY (MG/L)	TOTAL IRON (MG/L)	TOTAL ALUMINUM (MG/L)	TOTAL MANGANESE (MG/L)
ALL	8	82	-70	0.06	<0.05	0.16