

APPENDIX A

SF 330

ARCHITECT - ENGINEER QUALIFICATIONS

PART I - CONTRACT-SPECIFIC QUALIFICATIONS

A. CONTRACT INFORMATION

1. TITLE AND LOCATION: **AML Project 63-P3 Large Mine Coal Projects**
2. PUBLIC NOTICE DATE: **March 31, 2011**
3. SOLICITATION OR PROJECT NUMBER: **Wyoming AML Procurement of Professional Services**

B. ARCHITECT-ENGINEER POINT OF CONTACT

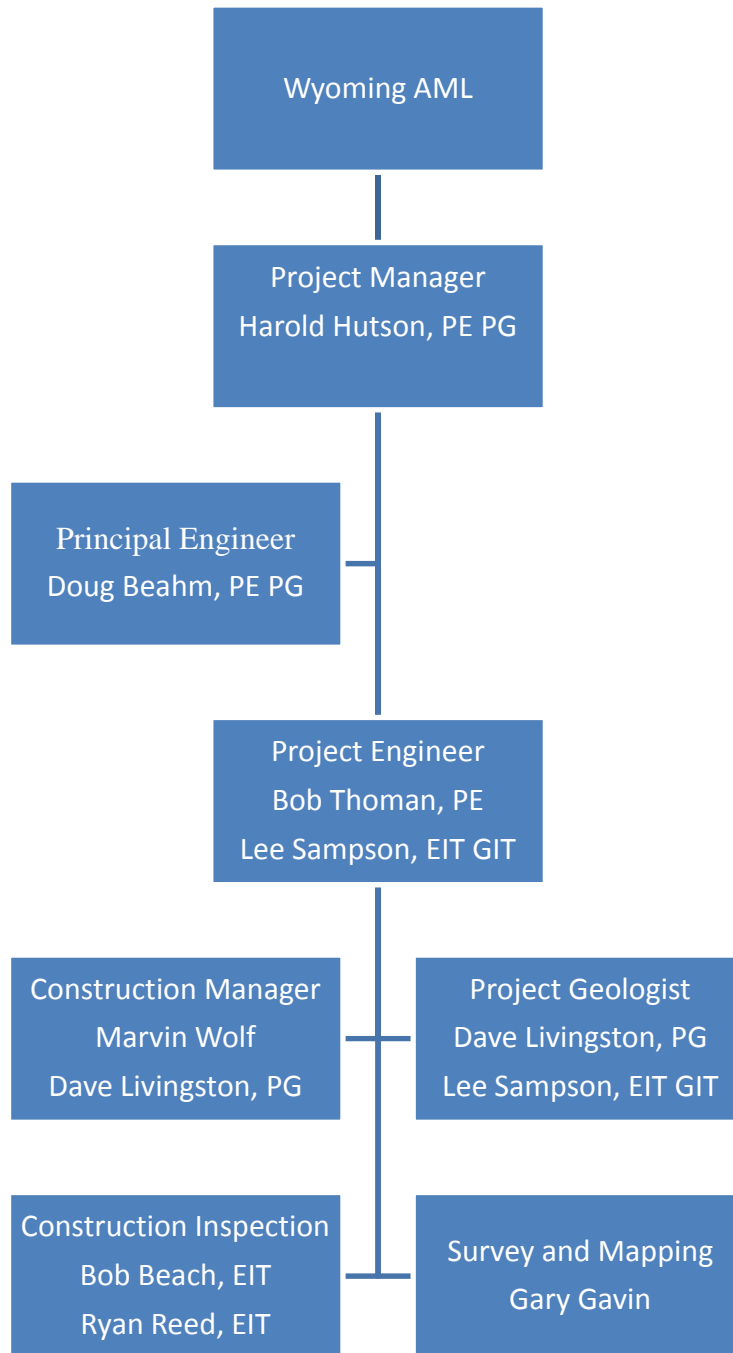
4. NAME AND TITLE: **Douglas Beahm, P.E., P.G., Principal Engineer/Owner**
5. NAME OF FIRM: **BRS Inc.**
6. TELEPHONE NUMBER: **307 857 3079**
7. FAX NUMBER: **307 857 3079**
8. E-MAIL ADDRESS: **brs@bresnan.net**

C. PROPOSED TEAM

(Complete this section for the prime contractor and all key subcontractors.)

-
- 9a. PRIME (XX)
- 9a. JOINT-VENTURE PARTNER (CHECK HERE):
- 9a. SUBCONTRACTOR (CHECK HERE):
- 9a. FIRM NAME: **BRS Inc.**
- 9a. IF BRANCH OFFICE CHECK HERE:
- 10a. ADDRESS **1225 Market, Riverton, WY 82501**
- 11a. ROLE IN THIS CONTRACT **Professional Services related to site investigation, project design, and construction management.**
-
- 9b. PRIME (CHECK HERE):
- 9b. JOINT-VENTURE PARTNER (CHECK HERE):
- 9b. SUBCONTRACTOR (CHECK HERE):
- 9b. FIRM NAME:
- 9b. IF BRANCH OFFICE CHECK HERE:
- 10b. ADDRESS
- 11b. ROLE IN THIS CONTRACT
-

D. ORGANIZATIONAL CHART OF PROPOSED TEAM



A. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. NAME: **Douglas L. Beahm**
13. ROLE IN THIS CONTRACT: **Principal Engineer**
- 14a. YEARS EXPERIENCE - TOTAL: 37
- 14b. YEARS EXPERIENCE - WITH CURRENT FIRM: 27
15. FIRM NAME AND LOCATION: **BRS INC., 1225 Market St., Riverton Wyoming 82501**
16. EDUCATION (*DEGREE AND SPECIALIZATION*): **B.S. Geological Engineering, Colorado School of Mines, 1974**
17. CURRENT PROFESSIONAL REGISTRATION (*STATE AND DISCIPLINE*): **Professional Engineer; Wyoming, Colorado, Utah, and Oregon and Professional Geologist; Wyoming**

OTHER PROFESSIONAL QUALIFICATIONS (*Publications, Organizations, Training, Awards, etc.*):

SME Certified Member, NSPE, ACEC, ASMR. Publications: "Abandoned Mine Lands Clean Up Verification Procedures for Radiological Parameters", 1988; "Clean Up of Radioactive Mine Waste at Abandoned Uranium Mines", 1989; "A Comparison of Open Pit Highwall Reduction for Hazard Mitigation by Cut, Cut and Fill, and Combined Cut and Fill Approaches", 1993; "The Buss Mine Reclamation Project, Gas Hills, Wyoming", 1995; "THE ANTELOPE URANIUM PROJECT -A Comparison of ISR and Heap Leach Extraction", 2007, presented at the Annual SME conference Denver, Colorado.

18.

19a(1) RELEVANT PROJECT - TITLE AND LOCATION: **AML 17H, Statewide Coal, SW Wyoming**

19a(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: 2002 - present

19a(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: ongoing

19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE: **Project Manager. This project includes the investigation, hazard prioritization, mitigation design, consents and clearances, and construction management services for all the abandoned coal mines in the southwest portion of Wyoming including Lincoln, Unita, Sweetwater, and Sublette counties. Mr. Beahm's role was to direct the overall project, maintain communications with AML and all interested parties, and to personally participate in and supervise all design and reporting. To date 10 separate major construction phases have been completed under the 17H project along with several small s projects completed under statewide contracts. These project total some twelve million dollars in construction. Mr. Beahm provided overall project management for this project which has been completed under budget with respect to both design and construction management services.**

19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: X

19b(1) RELEVANT PROJECT - TITLE AND LOCATION: **AML 8.1-I and II Statewide Inventory, Wyoming**

19b(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: 8.1-I 2000, 8.1-II 2005

19b(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: n/a

19b(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE: **This project included the inventory of all mine related disturbances in Wyoming. Mr. Beahm shared project management responsibilities for this project and was an active participant in site screening, field inventories, cost estimation, and reporting. Mr. Beahm lead filed investigations for coal, uranium, and hardrock mine sites located throughout the state and specifically in Carbon, Albany, Sheridan, Fremont, Park, Hot Springs, Campbell, Converse and Park counties. Mr. Beahm had primary roles in the development of field protocols, mine hazard classification, and cost estimation project wide.**

19b(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: X

19c(1) RELEVANT PROJECT - TITLE AND LOCATION: **AML 7E Shallow Groundwater Control and 7F-5 Hanna #4 Mine, Carbon Co. WY**

19c(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: AML 7F-5: 2003 - present

19c(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: **AML 7E: 1995, AML 7F-5: ongoing**

19c(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE: **Project Manager for the &E and &F5 projects. Directed design and construction activities and played a key role in Partnering with the local community and other interested parties in the project. The 7E Shallow Ground Water Control Project utilized a geotextile/HDPE drainage system which at the time was unique. This technology is now becoming widely used. The 7F5 project includes both an aspect of surface water flood control and more traditional mine hazard abatement. Mr. Beahm directed the design and construction of flood control structures which diminished peak flows by ~90% while passing surface water flow through the system.**

19c(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: X

19e(1) RELEVANT PROJECT - TITLE AND LOCATION: **AML 8-II Sheridan Area Reclamation Project, AML 17J North East Coal**

19e(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: **1996 - present**

19e(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: **1998, 2000**

19e(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE: **Mr. Beahm's work in the Sheridan coalfield spans a decade and has involved three separate projects. Specific duties have included project management, project design, and on-site construction management. The projects have included site investigation, filed inventories, hazard prioritization, and reclamation design. Individual projects have included traditional mine closure, mass grading and excavation, and the stabilization of over 2 miles of Goose Creek above its confluence with the Tongue River. The later project was nominated for a national award.**

19e(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: X

A. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

- 12. NAME: Harold J. Hutson
- 13. ROLE IN THIS CONTRACT: Project Engineer and Assistant Manager
- 14a. YEARS EXPERIENCE - TOTAL: 16
- 14b. YEARS EXPERIENCE - WITH CURRENT FIRM: 16
- 15. FIRM NAME AND LOCATION: **BRS INC., 1225 Market St., Riverton Wyoming 82501**
- 16. EDUCATION (*DEGREE AND SPECIALIZATION*): B.S. Geological Engineering
- 17. CURRENT PROFESSIONAL REGISTRATION (*STATE AND DISCIPLINE*): *Wyoming Professional Engineer and Professional Geologist*
- 18. OTHER PROFESSIONAL QUALIFICATIONS (*Publications, Organizations, Training, Awards, etc.*):
 MSHA Certified, SME Certified Member
 PUBLICATIONS: APPLICATION OF BEST AVAILABLE TECHNOLOGY TO RECLAMATION DESIGN AND INTEGRATION WITH MINE PLANNING, SME, 2009

- 19a(1) RELEVANT PROJECT - TITLE AND LOCATION: **AML 17H, Statewide Coal**
- 19a(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: 2002 - present
- 19a(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: ongoing
- 19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE:

Project Engineer for AML Project 17H, Statewide Coal Reclamation encompasses multiple project phases throughout Southwest Wyoming. The main phases are Phase 1, Kemmerer Area, Phase 2, Sweetwater County, and Phase 3, Evanston Area. Each phase has multiple contracts completed, in progress, or planned. The objective of the project is to eliminate the variety of hazards at the different sites related to abandoned underground and surface coal mines. These hazards include mine portals, mine subsidence, vertical shafts, mine highwalls, dangerous piles and embankments, underground coal fires, and mine spoils causing environmental degradation. Many of the sites are located near populated areas and most of the sites see high recreational use. The general method for reclamation of mine subsidence is to excavate the surface expression of the subsidence down until the mine workings are reached. A bulkhead is then constructed in the mine workings to prevent further subsidence, the excavation backfilled, and the area site graded to promote positive drainage away from the feature. Coal fires are addressed in much the same manner, with as much of the active fire excavated and the excavation backfilled with compacted material to limit air flow to the fire. Mine highwalls are reclaimed by backfilling the remnant pit to remove the hazard.

Highwall removal projects have involved the use of Carlson Natural Regrade™ software to design a geomorphically diverse, natural appearing landform. The final grade design consists of numerous secondary channels and ridges that feed into main meandering channels. GPS controlled equipment is used to created the final grade. This process has also been used on other 17H reclamation projects where large scale subsidence features have disrupted the natural drainage. After the reclamation and backfilling is completed the Natural Regrade concept is used to create a sustainable and more natural appearing topographic features and surface drainage. A tabulation of the projects completed follows.

Phase	Contract	Type of Reclamation	Construction Cost
Phase 1, Kemmerer Area	A	mine subsidence, coal fires, environmental degradation	\$801,695.18
	B	mine subsidence, water impoundments, erosion control structures, environmental degradation	\$611,705.89
	C	mine subsidence, coal fire, hazardous water body, dangerous piles, environmental degradation	\$698,004.08
Phase 2, Sweetwater Co.	A	mine subsidence, environmental degradation	\$890,695.66
	B	highwall removal, environmental degradation, drainage restoration, natural regrade design	\$1,887,371.59
	B-II	highwall removal, environmental degradation, drainage restoration, natural regrade design	\$1,971,960.27
	C	mine subsidence, environmental degradation	\$1,979,842.47
	D	mine subsidence, environmental degradation	\$1,630,176.30
	E	mine subsidence, coal fire, environmental degradation	\$871,749.05
Phase 3, Evanston Area	A	mine subsidence, coal fire, environmental degradation	\$641,012.74

Many of the reclamation sites are located at historic mine that contain historically and culturally important artifacts and structures. BRS Engineering works closely with AML archeologists during reclamation to not only insure no artifacts are damaged, but to stabilize and preserve the artifacts whenever possible. The willingness of BRS Engineering to preserve historic artifacts combined with the development of an innovative method of stopping the progression of an underground coal fire during the 17H-1A Project resulted in the project being selected as the 2006 AML Reclamation Project of the Year.

The scope and breadth of AML Project 17H encompasses all aspects of coal mine reclamation including site investigation, site prioritization, design, and construction management. Projects have included underground and surface coal mines, mine subsidence, coal slack and related mine waste, historical preservation, stream restoration, work in or near populated areas, and work in remote and environmentally sensitive areas.

19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: X

19b(1) RELEVANT PROJECT - TITLE AND LOCATION: *AML 8.1-I and II Statewide Inventory, Wyoming*

19b(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: 8.1-I 2000, 8.1-II 2005

19b(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: n/a

19b(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE:

Responsible for AML field inventory of mine sites in Wyoming including Hot Springs, Park, Washakie, Big Horn, Carbon, Fremont, Sublette, Teton, Sheridan, Sweetwater, Uinta, and Lincoln counties during two separate inventory projects. Work included database and site review, mapping, obtaining landowner consents, participation in the development of field protocols, and site cost estimation. Field team leader for site visits including coal, uranium, and hard rock deposits.

19b(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: X

19c(1) RELEVANT PROJECT - TITLE AND LOCATION: *AML 7E Shallow Groundwater Control and 7F-5 Hanna #4 Mine, Carbon Co. WY*

19c(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: AML 7F-5: 2003 - present

19c(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: *AML 7E: 1995, AML 7F-5: 2005*

19c(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE:

Junior Engineer on AML 7E performing construction inspection and surveying for groundwater drainage system within the Hanna city limits. Project Engineer on statewide contract under AML 7F-5 to rehabilitate the Hanna Museum as a historical mitigation project, including structural and HVAC repairs to provide structural integrity and comfort for museum staff and patrons. Field Engineer on Hanna #4 Mine investigations. Performed inventory in the Hanna basin as well as other areas of Carbon County under AML 8.1-II.

19c(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: X

19d(1) RELEVANT PROJECT - TITLE AND LOCATION: *AML 17F-5 Gebo Reclamation Project, Hot Springs County*

19d(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: 2001

19d(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: n/a

19d(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE:

Subconsultant to PHC Reclamation on coal mining district near Thermopolis, Wyoming. Performed inventory of sites under AML 8.1-I which provided baseline data for preparation of site descriptions, cost estimation, and site maps for the AML 17F-5 Pre-Design report. Performed limited site investigations and construction management services.

19d(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: X

19e(1) RELEVANT PROJECT - TITLE AND LOCATION: *AML 8-II Sheridan Area Reclamation Project, AML 17J North East Coal*

19e(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: 1998 - 2000

19e(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: *1998 - 2000*

19e(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE:

Performed earthworks designs for AML 8-II reclamation of mine subsidence sites including erosion control structures and mass grading of subsidence areas. Performed limited construction services for mine subsidence sites and Goose Creek stabilization project including surveying and construction inspection. Following inventory of multiple sites in Sheridan county under AML 17H and 8.1-II, participated in AML 17J providing conceptual design and conceptual surface water hydrologic plans for the Hidden Water sites, and performed conceptual earthworks design and a limited drilling program at the Placheck Pit.

19e(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: X

A. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. NAME: **Robert W. (Bobby) Thoman, PE**
13. ROLE IN THIS CONTRACT: **Project Engineer**
- 14a. YEARS EXPERIENCE - TOTAL: **4**
- 14b. YEARS EXPERIENCE - WITH CURRENT FIRM: **1**
15. FIRM NAME AND LOCATION: **BRS INC.**
16. EDUCATION (*DEGREE AND SPECIALIZATION*): **BS and MS, University of Wyoming, Civil Engineering**
17. CURRENT PROFESSIONAL REGISTRATION (*STATE AND DISCIPLINE*): **Wyoming Professional Engineer, Civil - 11568**
18. OTHER PROFESSIONAL QUALIFICATIONS (*Publications, Organizations, Training, Awards, etc.*):
**American Society of Civil Engineers (ASCE); Environmental and Water Resources Institute (EWRI);
Nuclear Densometer Certified; MSHA Certified**

SELECTED PUBLICATIONS:

Thoman, R. W. and Brown, J. J. (2009). Construction of a low-flow channel in Barber Creek: case study in the Powder River Basin, Wyoming. Proceedings of the ASCE World Water and Environmental Resource Congress, Great Rivers, Kansas City, Mo.

Brown, J. J., and Thoman, R. W. (2009).

Sustainable design and construction of earthen-dam reservoirs for water produced in association with coalbed natural gas in the Powder River Basin, Wyoming. Proceedings of the ASCE World Water and Environmental Resource Congress, Great Rivers, Kansas City, Mo.

Thoman, R. W. and Niezgodá, S. L. (2008). Determining Erodibility, Critical Shear Stress, and Allowable Discharge Estimates for Cohesive Channels: A Case Study in the Powder River Basin of Wyoming. Journal of Hydraulic Engineering. 134(12), 1677-1687.

Thoman, R. W. and Niezgodá, S. L. (2007). Estimating the erodibility of ephemeral, cohesive streams that receive coal bed natural gas product water in the Powder River Basin of Wyoming. Proceedings of the ASCE World Water and Environmental Resource Congress, Restoring our Natural Habitat, Tampa, FL.

19a(1) RELEVANT PROJECT - TITLE AND LOCATION: **AML Project 17H-1D, Ham's Fork, Kemmerer, WY**

19a(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: 2011

19a(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: 2011

19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE: Mr. Thoman is currently the project design engineer for AML Project 17H-1D, the Ham's Fork Rehabilitation Project, located near Kemmerer, Wyoming. This project involves the removal of mine waste from the flood plain of Ham's Fork and includes 404 permitting through the US Army Corps of Engineers and right-of-way negotiations with the UP railroad. Mr. Thoman is spearheading the design and permitting and will be the construction manager for this project later in 2011.

19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: **XX**

19b(1) RELEVANT PROJECT - TITLE AND LOCATION: **Enlargement of Bell Nob No. 2 Reservoir – Campbell Co. Dept. of Public Works, Gillette, WY**

19b(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: 2008

19b(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: *Ongoing*

19b(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE: Mr. Thoman provided design recommendations for the enlargement of Bell Nob No. 2 Reservoir including specifications and installation procedures for an impermeable liner. Mr. Thoman worked with city engineers to design an irrigation facility to store 164 acre-feet of water for the Bell Nob golf course. The design incorporated an impermeable 40-mil HDPE liner to prevent seepage loss. Mr. Thoman interacted with the Wyoming State Engineer's Office to obtain the storage permit, perform the breach analysis, propose a hazard rating and provide construction inspection and oversight.

19b(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm:

19c(1) RELEVANT PROJECT - TITLE AND LOCATION: **Barber Creek Re-channelization – Williams Production RMT, Gillette, WY**

19c(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES:2005

19c(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION:*Ongoing*

19c(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE: Mr. Thoman was Project Manager for the re-channelization of Barber Creek to convey CBNG-produced water. Tasks included designing a stable channel to convey a discharge of 20 cfs, analysis of the vegetation, development of surface water controls, erosion analysis and construction management.

19c(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm:

19d(1) RELEVANT PROJECT - TITLE AND LOCATION: **Kinney Reservoir – Cliff Henderson, Hanna, WY**

19d(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES:2010

19d(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION:*2011*

19d(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE: Mr. Thoman was Project Manager for providing a repair plan for the Kinney Reservoir. This 480 acre-feet site had breached due to an inoperable drain pipe. The design called for replacement of the drain pipe and repair of the breach and spillway. Mr. Thoman oversaw construction, provided technical assistance and oversight and coordinated with the Wyoming State Engineer's Office to obtain the proper notifications and ensure proper permitting compliance.

19d(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm:

A. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. NAME: **Gary Gavin**
13. ROLE IN THIS CONTRACT: **Surveying and Mapping, Assist in Project Design and Construction Management**
- 14a. YEARS EXPERIENCE - TOTAL: **26 years**
- 14b. YEARS EXPERIENCE - WITH CURRENT FIRM: **11 years**
15. FIRM NAME AND LOCATION: **BRS INC.**
16. EDUCATION (*DEGREE AND SPECIALIZATION*): **North American School of Surveying and Mapping – Associate Degree.
International correspondence School of Mechanical Engineering - Certificate**
17. CURRENT PROFESSIONAL REGISTRATION (*STATE AND DISCIPLINE*): **Certified Mine Foreman, State of Wyoming**
18. OTHER PROFESSIONAL QUALIFICATIONS (*Publications, Organizations, Training, Awards, etc.*): **MSHA Certified, Member Wyoming Society of Professional Engineers**

19a(1) RELEVANT PROJECT - TITLE AND LOCATION: **AML 17H Statewide Coal**

19a(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: **2002 - present**

19a(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: **Ongoing**

19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE: The main phases are Phase 1, Kemmerer Area, Phase 2, Sweetwater County, and Phase 3, Evanston Area. Each phase has multiple contracts completed, in progress, or planned. The objective of the project is to eliminate the variety of hazards at the different sites related to abandoned underground and surface coal mines. These hazards include mine portals, mine subsidence, vertical shafts, mine highwalls, dangerous piles and embankments, underground coal fires, and mine spoils causing environmental degradation. Many of the sites are located near populated areas and most of the sites see high recreational use. The general method for reclamation of mine subsidence is to excavate the surface expression of the subsidence down until the mine workings are reached. A bulkhead is then constructed in the mine workings to prevent further subsidence, the excavation backfilled, and the area site graded to promote positive drainage away from the feature. Coal fires are addressed in much the same manner, with as much of the active fire excavated and the excavation backfilled with compacted material to limit air flow to the fire. Mine highwalls are reclaimed by backfilling the remnant pit to remove the hazard.

Highwall removal projects have involved the use of Carlson Natural Regrade™ software to design a geomorphically diverse, natural appearing landform. The final grade design consists of numerous secondary channels and ridges that feed into main meandering channels. GPS controlled equipment is used to create the final grade. This process has also been used on other 17H reclamation projects where large scale subsidence features have disrupted the natural drainage. After the reclamation and backfilling is completed the Natural Regrade concept is used to create a sustainable and more natural appearing topographic features and surface drainage.

Mr. Gavin has been instrumental in the implementation of the “Natural Regrade” reclamation techniques on AML projects. These projects require either intensive field staking or GPS controlled mobile equipment. Mr. Gavin has interfaced directly with reclamation contractors to insure accurate and efficient implementation of the “Natural Regrade” designs in the field.

19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: **XXX**

19b(1) RELEVANT PROJECT - TITLE AND LOCATION: **AML 8.1-II Statewide Inventory, Wyoming**

19b(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: **8.1-II 2005**

19b(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: **n/a**

19b(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE: The project included a comprehensive site investigation, GPS mapping, prioritization of hazards, and conceptual planning and cost estimation for mine related hazards for various mined commodities throughout the state. Mr. Gavin participated in site investigation and mapping throughout the state, specifically mine sites in Wyoming including Hot Springs, Washakie, Big Horn, Carbon, Fremont, Sublette, Sheridan, Sweetwater, Uinta, and Lincoln counties during inventory and related projects. Work included site investigation and mapping at numerous locations including coal, uranium, and hard rock deposits.

19b(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: **XXX**

19c(1) RELEVANT PROJECT - TITLE AND LOCATION: **AML 7F5 Hanna No. 4 Mine, Carbon Co. WY**

19c(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: **AML 7F-5: 2003**

19c(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: **AML 7F-5: 2005**

19c(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE: This project includes hazard mitigation related to mine openings and subsidence related to the abandoned Hanna No. 4 Mine located within and adjacent to Hanna, WY and flood control related to the Stink Creek drainage both within and up-gradient of Hanna. Mr. Gavin prepared base mapping for the site and surrounding drainage basin (approximately 5 square miles). This included integration with existing mapping provided by Arch Minerals, coordination of aerial mapping, and integration with ground surveys in key areas. Mr. Gavin assisted in the preparation of earthwork design, volumetric calculations and preparation of construction plans and SEO permit documents. Mr. Gavin provided construction surveying, stakeout, as built mapping, and volumetric surveys for the first phase of construction for this project.

19c(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: **XXX**

19e(1) RELEVANT PROJECT - TITLE AND LOCATION: **AML 17J North East Coal, AML 17H, and AML 8.1-II**

19e(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: **2004 - present**

19e(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: **Ongoing**

19e(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE: These projects all included abandoned coal mine sites, both surface and underground mining, in Sheridan county, Wyoming. Mr. Gavin prepared base mapping for the site and surrounding drainage basin (approximately 8 square miles) for the Hidden Water area, Kleenburn site, Plachek pit, and the Armstrong mine. This included integration of existing mapping with ground surveys and subsurface surveys of flooded mine pits. Mr. Gavin assisted in the preparation of preliminary earthwork design, volumetric calculations and surface drainage considerations for the Hidden Water area.

19d(1) RELEVANT PROJECT - TITLE AND LOCATION: **AMAX Coal, Gillette, Wyoming**

19d(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: **1986 -1998**

19d(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: **Ongoing Active Mine Operation**

19d(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE: Mr. Gavin was employed by the AMAX Coal company and was responsible for all surveying and mapping related to open pit mining and reclamation. Surveying methods included total station, GPS, and laser positioning technologies. During this period Mr. Gavin received formal training and extensive working experience with a variety of engineering and mining software including AutoCad, Softdesk, Eagle Point, and SurvCad.

19d(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm:

A. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

- 12. NAME: Lee E. Sampson, EIT, GIT
- 13. ROLE IN THIS CONTRACT: Project Engineer
- 14a. YEARS EXPERIENCE - TOTAL: 4
- 14b. YEARS EXPERIENCE - WITH CURRENT FIRM: 4
- 15. FIRM NAME AND LOCATION: **BRS INC.**
- 16. EDUCATION (*DEGREE AND SPECIALIZATION*): BS Geological Engineering, CSM, 2007
- 17. CURRENT PROFESSIONAL REGISTRATION (*STATE AND DISCIPLINE*): *EIT and GIT Wyoming*
- 18. OTHER PROFESSIONAL QUALIFICATIONS (*Publications, Organizations, Training, Awards, etc.*):
SME – Society for Mining, Metallurgy, and Exploration, Inc.
MSHA Certified

19a(1) RELEVANT PROJECT - TITLE AND LOCATION: *AML 17H statewide Coal, SW Wyoming*

19a(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: Ongoing

19a(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: *Ongoing*

19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE:

19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: XX

19b(1) RELEVANT PROJECT - TITLE AND LOCATION: *AML 16N, D9 and K Pit Project, Fremont Co. Wyoming*

19b(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: Limited Ongoing

19b(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: *2009*

19b(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE:

19b(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: XX

19c(1) RELEVANT PROJECT - TITLE AND LOCATION: *AML 16G, Day Loam Project, Fremont Co. Wyoming*

19c(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: Ongoing

19c(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: *Schedule 2011*

19c(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE:

19c(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: XX

A. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

- 12. NAME: **David A. Livingston**
- 13. ROLE IN THIS CONTRACT: **Project Geologist and Construction Manager**
- 14a. YEARS EXPERIENCE - TOTAL: **22**
- 14b. YEARS EXPERIENCE - WITH CURRENT FIRM: **5**
- 15. FIRM NAME AND LOCATION: **BRS INC.**
- 16. EDUCATION (*DEGREE AND SPECIALIZATION*): **B.S in Geology**
- 17. CURRENT PROFESSIONAL REGISTRATION (*STATE AND DISCIPLINE*) **PG Wyoming**
- 18. OTHER PROFESSIONAL QUALIFICATIONS (*Publications, Organizations, Training, Awards, etc.*):

**Graduate Studies in Geology, Texas A&M University, College Station, Texas
Bachelor of Science in Geology, Mesa College, Grand Junction Colorado
U.S. Army Petroleum Testing Laboratory Technician Course, Ft. Lee, Virginia
Radiation Safety Training Short Course, Chandler, Arizona
Radiation Safety Officer Course, Denver, Colorado
40 Hour OSHA Hazardous Waste Site Worker Course, Casper, Wyoming
Hydrogen Sulfide/Carbon Dioxide Safety Training, Green River, Wyoming
MSHA Surface Miner Certified with current 8 hour refresher training
NICET, ACI, ATI and MSHA Certification**

19a(1) RELEVANT PROJECT - TITLE AND LOCATION: **AML 17H Statewide Coal SW Wyoming**

19a(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES:

19a(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: 2006

19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE: Performed construction management for a coal reclamation project. Construction Manager for hourly subsidence feature reclamation projects 17H-1A, 17H-1C, 17H-2A, and 17H-3A. Mr. Livingston also assisted other Construction Managers on projects 17H-1B, 17H-2B, 17H-2BII, 17H-2C, and 17H-2D. These projects were time and materials type project to address hazards created by abandoned underground coal mines. The types of hazards that were addressed included open and covered portals, shallow subsidence features, and open subsidence features. In addition, the project addressed mine fires for which a firewall was constructed to halt the advance of an underground coal fire. These projects also involved the removal and burial of coal slack from drainages, re-alignment of drainage features and the construction of a water impoundment dam and pond. My role included directing the activities of the contractor, determining the construction schedule, inspecting the work to insure it was completed to the project specifications, and maintaining records for payment of the contractor.

19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: XX

19b(1) RELEVANT PROJECT - TITLE AND LOCATION: **AML 6A-X, Rock Springs, Wyoming Coal.**

19b(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: 2006

19b(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION:

19b(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE: Performed logging of drill holes and analyzing and compiling of data for reports. Provide Construction Management services for various phases of the project.

19b(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: XX

19c(1) RELEVANT PROJECT - TITLE AND LOCATION: **Griffin Reservoir, Riverton, Wyoming.**

19c(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES:

19c(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: 2006

19c(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE: Project was construction of a water impoundment pond for a coal bed methane project. As project manager for construction my role included site inspections to insure initial site preparation was performed in accordance with the engineer's report, supervising and performing quality control tests on compacted fill, and assisting the contractor in determining the most efficient method of moisture conditioning and compacting the fill material to meet project specifications.

19c(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm:

A. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

- 12. NAME: Marvin J Wolf
- 13. ROLE IN THIS CONTRACT: Construction Manager
- 14a. YEARS EXPERIENCE - TOTAL: 46
- 14b. YEARS EXPERIENCE - WITH CURRENT FIRM: 4
- 15. FIRM NAME AND LOCATION: **BRS INC.**
- 16. EDUCATION (*DEGREE AND SPECIALIZATION*):
- 17. CURRENT PROFESSIONAL REGISTRATION (*STATE AND DISCIPLINE*): *MSHA Trainer, Mine foreman, WY*
- 18. OTHER PROFESSIONAL QUALIFICATIONS (*Publications, Organizations, Training, Awards, etc.*):

- 40 Hour OSHA Hazardous Waste Training
- 6 Hour OSHA Refresher Hazardous Waste Training
- 8 Hour OSHA Hazardous Waste Supervisor Training
- 8 Hour OSHA Safety Training
- 8 Hour Course U.S.T. Removal
- 8 Hour Course U.S.T. Installations
- 8 Hour Course Soil & Ground Water Sampling

19a(1) RELEVANT PROJECT - TITLE AND LOCATION: *AML 17H, Statewide Coal, SW Wyoming*

19a(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: *Ongoing*

19a(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: *Ongoing*

19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE:

Mr. Wolf has served as Construction Manager for multiple construction phases on AML Project 17H. The AML Project 17H, Statewide Coal Reclamation encompasses multiple project phases throughout Southwest Wyoming. The objective of the project is to eliminate the variety of hazards at the different sites related to abandoned underground and surface coal mines. These hazards include mine portals, mine subsidence, vertical shafts, mine highwalls, dangerous piles and embankments, underground coal fires, and mine spoils causing environmental degradation.

Mr. Wolf has been the construction manager on two projects which involved the use of Carlson Natural Regrade™ software to design a geomorphically diverse, natural appearing landform. The final grade design consists of numerous secondary channels and ridges that feed into main meandering channels. GPS controlled equipment is used to create the final grade. After the reclamation and backfilling is completed the Natural Regrade concept is used to create a sustainable and more natural appearing topographic features and surface drainage.

19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: *XX*

19b(1) RELEVANT PROJECT - TITLE AND LOCATION: *Riverton Tailings Project, DOE*

19b(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: *1999*

19b(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: *1999*

19b(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE:

Mr. Wolf was the site manager and construction superintendent for the clean-up and haulage of mill tailings from the Susquehanna Mill facility located near Riverton, Wyoming which included haulage and disposal of the tailings at the Umetco Minerals facility in the Gas Hills some 55 miles to east for final disposal. This project included the excavation and placement of approximately 1.7 million cubic yards of material.

19b(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm:

A. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

- 12. NAME: Ryan Reed
- 13. ROLE IN THIS CONTRACT: Construction Inspector and Engineer
- 14a. YEARS EXPERIENCE - TOTAL: 2
- 14b. YEARS EXPERIENCE - WITH CURRENT FIRM: 1
- 15. FIRM NAME AND LOCATION: **BRS INC.**
- 16. EDUCATION (*DEGREE AND SPECIALIZATION*): BS Mining Engineering, CSM 2009
- 17. CURRENT PROFESSIONAL REGISTRATION (*STATE AND DISCIPLINE*): EIT
- 18. OTHER PROFESSIONAL QUALIFICATIONS (*Publications, Organizations, Training, Awards, etc.*):
MSHA Certified

19. 19a(1) RELEVANT PROJECT - TITLE AND LOCATION:

AML 17H-2E, Sweetwater County Coal Reclamation, Rock Springs South.

19a(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: 2010

19a(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: 2010

19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE:

Mr. Reed was the construction inspector/manager for the AML 17H-2E Project completed in 2010. This project included the excavation and closure of numerous mine subsidence features. The contract was an hourly contract which required Mr. Reed to work with the contractor to insure that the reclamation work was completed according to specifications and that all billing from the contractor was proper. This project also required understanding and use of mine mapping to anticipate mine voids.

19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm:XX

19b(1) RELEVANT PROJECT - TITLE AND LOCATION: AML 17H-1C, Kemmerer Area Coal Reclamation.

Mr. Reed was the construction inspector/manager for the AML 17H-2E Project completed in 2010. This project included the excavation and closure of numerous mine subsidence features and mine portals . As with the 17H-2E project, the contract was an hourly contract which required Mr. Reed to work with the contractor to insure that the reclamation work was completed according to specifications and that all billing from the contractor was proper. This project also required understanding and use of mine mapping to anticipate mine voids.

19b(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: 2010

19b(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION:2010

19b(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE: Construction Inspector

19b(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: XX

A. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

- 12. NAME: Robert Beach
- 13. ROLE IN THIS CONTRACT: Construction Inspector / Geologist
- 14a. YEARS EXPERIENCE - TOTAL: 1
- 14b. YEARS EXPERIENCE - WITH CURRENT FIRM: 1
- 15. FIRM NAME AND LOCATION: **BRS INC.**
- 16. EDUCATION (*DEGREE AND SPECIALIZATION*): BS Geological Engineering, CSM December, 2010
- 17. CURRENT PROFESSIONAL REGISTRATION (*STATE AND DISCIPLINE*): EIT
- 18. OTHER PROFESSIONAL QUALIFICATIONS (*Publications, Organizations, Training, Awards, etc.*):
MSHA Certified

-
- 19a(1) RELEVANT PROJECT - TITLE AND LOCATION: NA
 - 19a(2) RELEVANT PROJECT - YEAR COMPLETED - PROFESSIONAL SERVICES: NA
 - 19a(2) RELEVANT PROJECT - YEAR COMPLETED - CONSTRUCTION: NA
 - 19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION AND SPECIFIC ROLE:

Mr. Beach is a recent graduate. He is currently being trained with respect to computer aided design which includes a reclamation design for titan Uranium's Sheep Mountain project. Mr. Beach has also received instruction with regard to the upcoming AML 17H construction projects and has assisted in preparing plans and specifications. It is anticipated that Mr. Beach will be utilized as a construction inspector for AML 17H under the direct supervision of experienced personnel.

- 19a(3) RELEVANT PROJECT - BRIEF DESCRIPTION - Check here if project performed with current firm: NA
-

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

- A. EXAMPLE PROJECT KEY NUMBER: **AML 17 H Statewide Coal Reclamation Project**
- B. TITLE AND LOCATION (*City and State*): **Lincoln, Sweetwater, Uinta, Sublette, and Teton Counties, Wyoming**
- C. YEAR COMPLETED - PROFESSIONAL SERVICES: **ongoing**
- D. YEAR COMPLETED - CONSTRUCTION (*If applicable*): **ongoing**
- 23a. PROJECT OWNER'S INFORMATION - PROJECT OWNER: **Wyoming AML**
- 23b. PROJECT OWNER'S INFORMATION - POINT OF CONTACT NAME: **Jeff Meena, AML Project Officer**
- 23c. PROJECT OWNER'S INFORMATION - POINT OF CONTACT TELEPHONE NUMBER: **307 473-8160**
24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (*Include scope, size, and cost*): **Follows**
25. FIRMS FROM SECTION INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION (<i>City and State</i>)	(3) ROLE
BRS Inc.	Riverton, WY	Site Investigation, Design, CM

A brief project description follows:

AML Project 17H, Statewide Coal Reclamation encompasses multiple project phases throughout Southwest Wyoming. The main phases are Phase 1, Kemmerer Area, Phase 2, Sweetwater County, and Phase 3, Evanston Area. Each phase has multiple contracts completed, in progress, or planned.

The objective of the project is to eliminate the variety of hazards at the different sites related to abandoned underground and surface coal mines. These hazards include mine portals, mine subsidence, vertical shafts, mine highwalls, dangerous piles and embankments, underground coal fires, and mine spoils causing environmental degradation. Many of the sites are located near populated areas and most of the sites see high recreational use. The general method for reclamation of mine subsidence is to excavate the surface expression of the subsidence down until the mine workings are reached. A bulkhead is then constructed in the mine workings to prevent further subsidence, the excavation backfilled, and the area site graded to promote positive drainage away from the feature. Coal fires are addressed in much the same manner, with as much of the active fire excavated and the excavation backfilled with compacted material to limit air flow to the fire. Mine highwalls are reclaimed by backfilling the remnant pit to remove the hazard.

Highwall removal projects have involved the use of Carlson Natural Regrade™ software to design a geomorphically diverse, natural appearing landform. The final grade design consists of numerous secondary channels and ridges that feed into main meandering channels. GPS controlled equipment is used to create the final grade. This process has also been used on other 17H reclamation projects where large scale subsidence features have disrupted the natural drainage. After the reclamation and backfilling is completed the Natural Regrade concept is used to create a sustainable and more natural appearing topographic features and surface drainage.

The table below lists the different phases and contracts that have been completed and the types of reclamation completed.

Phase	Contract	Type of Reclamation	Construction Cost
Phase 1, Kemmerer Area	A	mine subsidence, coal fires, environmental degradation	\$801,695.18
	B	mine subsidence, water impoundments, erosion control structures, environmental degradation	\$611,705.89
	C	mine subsidence, coal fire, hazardous water body, dangerous pile, environmental degradation	\$698,004.08
Phase 2, Sweetwater Co.	A	mine subsidence, environmental degradation	\$890,695.66
	B	highwall removal, environmental degradation, drainage restoration with natural regrade design	\$1,887,371.59
	B-II	highwall removal, environmental degradation, drainage restoration with natural regrade design	\$1,971,960.27
	C	mine subsidence, environmental degradation	\$1,979,842.47
	D	mine subsidence, environmental degradation	\$1,630,176.30
Phase 3, Evanston Area	E	mine subsidence, coal fire, environmental degradation	\$871,749.05
	A	mine subsidence, coal fire, environmental degradation	\$641,012.74

Many of the reclamation sites are located at historic mine that contain historically and culturally important artifacts and structures. BRS Engineering works closely with AML archeologists during reclamation to not only insure no artifacts are damaged, but to stabilize and preserve the artifacts whenever possible.

The willingness of BRS Engineering to preserve historic artifacts combined with the development of an innovative method of stopping the progression of an underground coal fire during the 17H-1A Project resulted in the project being selected as the 2006 AML Reclamation Project of the Year.

Open Subsidence, Glencoe Site, Kemmerer



Open Mine Workings, Superior



Large Scale Excavation, Evanston Area



Coal Fire Excavation, Kemmerer



Channel Construction for Natural Regrade Design



Completed Natural Regrade Channel



Restored Portal, Superior



Restored Portal, Kemmerer



The scope and breadth of AML Project 17H encompasses all aspects of coal mine reclamation including site investigation, site prioritization, design, and construction management. Projects have included underground and surface coal mines, mine subsidence, coal slack and related mine waste, historical preservation, stream restoration, work in or near populated areas, and work in remote and environmentally sensitive areas.

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

- A. EXAMPLE PROJECT KEY NUMBER: **AML 8.1 and 8.1-II Statewide Mine Inventory Projects**
- B. TITLE AND LOCATION (*City and State*): **Statewide, Wyoming**
- C. YEAR COMPLETED - PROFESSIONAL SERVICES: **2000 - 2005**
- D. YEAR COMPLETED - CONSTRUCTION (*If applicable*): **N/A**
- 23a. PROJECT OWNER'S INFORMATION - PROJECT OWNER: **Wyoming AML**
- 23b. PROJECT OWNER'S INFORMATION - POINT OF CONTACT NAME: **Evan Green, AML Project Officer**
- 23c. PROJECT OWNER'S INFORMATION - POINT OF CONTACT TELEPHONE NUMBER: **307 777-6145**
- 24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (*Include scope, size, and cost*): **Follows**
- 25. FIRMS FROM SECTION INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION (<i>City and State</i>)	(3) ROLE
BRS Inc.	Riverton, WY	Inventory

The AML 8.1 and 8.1-II Projects provided the basic mine inventories for the current projects. A brief project description follows:

BRS was responsible for AML field inventory of mine sites in several Wyoming counties including Hot Springs, Park, Washakie, Big Horn, Carbon, Fremont, Sublette, Teton, Sheridan, Sweetwater, Uinta, and Lincoln during two separate inventory projects. The objective of the projects was to locate abandoned mine sites, inventory and document existing site hazards, estimate reclamation costs, and prioritize sites for eventual inclusion in the statewide abandoned mine lands database. BRS participated as a subconsultant during both projects, but was independently responsible for the results within the areas assigned by the prime. Work included historic site location research, database and site review, development of the most comprehensive historic mine map collection in Wyoming, participation in the development of field protocols, obtaining landowner consents, site inventory including coal, uranium, and hard rock deposits, quality control and assurance, and site cost estimation and hazard ranking.

Many hazardous mine features remain unreclaimed in Wyoming of which BRS has direct knowledge due to participation in the inventory projects.

Wind River Indian Reservation, Barquin Mine:



Carbon County – Carbon No. 2 Mine:



Park County – Pole Cat Bench:



Fremont County – Hudson No. 2 Mine:



Hot Springs County Mine Cart:



Hot Springs County Open Portal:



Bighorn County Open Portal:



Washakie County Open Portal:



F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

- A. EXAMPLE PROJECT KEY NUMBER: **AML 17J - Northeast Coal Project**
- B. TITLE AND LOCATION (*City and State*): **Sheridan, Johnson, Campbell, Converse, Crook, and Weston Counties, Wyoming**
- C. YEAR COMPLETED - PROFESSIONAL SERVICES: **2008**
- D. YEAR COMPLETED - CONSTRUCTION (*If applicable*): **2008**
- 23a. PROJECT OWNER'S INFORMATION - PROJECT OWNER: **Wyoming AML**
- 23b. PROJECT OWNER'S INFORMATION - POINT OF CONTACT NAME: **Ernie Robb, AML Project Officer**
- 23c. PROJECT OWNER'S INFORMATION - POINT OF CONTACT TELEPHONE NUMBER: **307 473-8160**
- 24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (*Include scope, size, and cost*): **Follows**
- 25. FIRMS FROM SECTION INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION (<i>City and State</i>)	(3) ROLE
BRS Inc.	Riverton, WY	Site Investigation, Design

BRS provided professional services as a subconsultant to PHC Reclamation on the 17 J Northeast Coal Project. Professional services have include site screening, site investigation and mapping, subsurface investigation of mine subsidence and mine fire, and preliminary design of the Hidden Water and Plachek pit areas.

A brief description of the 17 J project follows:

The 17 J Northeast Coal Project will ultimately address some 220 mine sites in the northeast portion of Wyoming encompassing all of the Powder River Basin. These sites include:

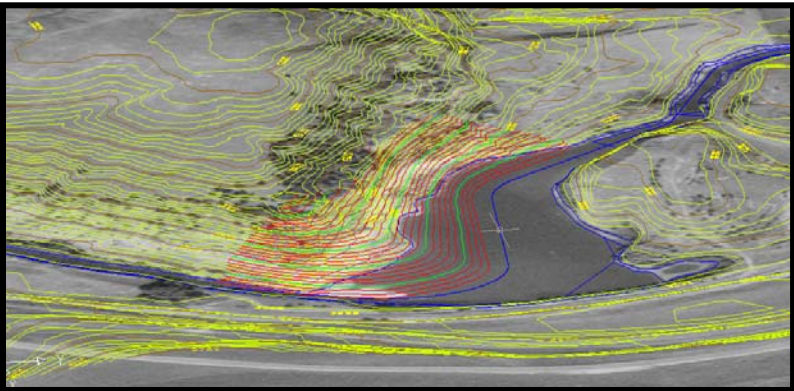
- Stream Restoration
- Mine Subsidence
- Open Pit Mine Reclamation
- Mine Fires
- Underground Mine Closures
- Preservation of Historic Structures

Project Examples:

Plachek Pit:



Existing Condition – Unstable Highwall with Mine Fire



BRS' Conceptual Reclamation Design

Hidden Water Area:



This area includes the Big Horn Strip, Randall, and Ash Creek mines. BRS completed site investigation and mapping and preliminary reclamation designs for this site.

Typical Underground Sites:

Carney Mine:



F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

A. EXAMPLE PROJECT KEY NUMBER: **AML 7F-5, Hanna No. 4 Mine Project**

B. TITLE AND LOCATION (*City and State*): **Hanna, Wyoming**

C. YEAR COMPLETED - PROFESSIONAL SERVICES: **Ongoing**

D. YEAR COMPLETED - CONSTRUCTION (*If applicable*): **Ongoing**

23a. PROJECT OWNER'S INFORMATION - PROJECT OWNER: **Wyoming AML**

23b. PROJECT OWNER'S INFORMATION - POINT OF CONTACT NAME: **Barry Shelley, AML Project Officer**

23c. PROJECT OWNER'S INFORMATION - POINT OF CONTACT TELEPHONE NUMBER: **307 473-1393**

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (*Include scope, size, and cost*): **Follows**

25. FIRMS FROM SECTION INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION (<i>City and State</i>)	(3) ROLE
BRS Inc.	Riverton, WY	Site Investigation, Design, CM

The Hanna Shallow Ground Water Control Project is similar to typical coal mine reclamation projects with respect to mine subsidence and mine closure issues, but has larger surface water control issues than many AML projects. A brief project description follows:

This project is within the immediate vicinity of Hanna and adjacent to Arch of Wyoming's Seminole mine permit area. The Hanna No. 4 underground mine underlies the majority of the Stink Creek drainage. A subsurface drilling program was developed with the aid of underground mine mapping. Drilling revealed a 30 foot mine void less than 50 feet below the surface within steeply dipping coal beds. One emergency closure of an open subsidence feature has already been completed. Following Arch's reclamation of an old haul road which acted as a dam across Stink Creek, the town of Hanna was left unprotected against storm water runoff from upland areas north of the townsite. BRS constructed surface water attenuation structures which will abate potential flood peak flows by over 90% without the retention of water. Without the construction of these structures, hydrologic studies predicted dire consequences under as low as a 10 year storm event. As a unique aspect of this project, the Hanna Museum was rehabilitated as a historical mitigation, including structural and HVAC repairs to provide structural integrity and comfort for museum staff and patrons.

KEY PROJECT REQUIREMENTS:

- **Site investigation, surface and subsurface**
- **Ownership and eligibility determination**
- **Permitting and consents**
- **Mine and subsidence clearance**
- **Surface drainage restoration and flood control**

Upper Flood Control Structure Site Prior to Construction:



During Construction – Construction of Key Way



During Construction – Compaction of Earthen Structure



Completed Attenuation Feature with Outlet Structure:



The Hanna Museum, Registered National Historic Place:



Structural Trusses Constructed to Reinforce Roof:



Mining Artifact Display:



New Heater and Air Conditioner:



F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

- A. EXAMPLE PROJECT KEY NUMBER: **AML 6A-X Rock Springs Coal Project**
- B. TITLE AND LOCATION (*City and State*): **City of Rock Springs, Sweetwater County, Wyoming**
- C. YEAR COMPLETED - PROFESSIONAL SERVICES: **2008**
- D. YEAR COMPLETED - CONSTRUCTION (*If applicable*): **2008**
- 23a. PROJECT OWNER'S INFORMATION - PROJECT OWNER: **Wyoming AML**
- 23b. PROJECT OWNER'S INFORMATION - POINT OF CONTACT NAME: **Barry Shelley, AML Project Officer**
- 23c. PROJECT OWNER'S INFORMATION - POINT OF CONTACT TELEPHONE NUMBER: **307 473-1393**
- 24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (*Include scope, size, and cost*): **Follows**
- 25. FIRMS FROM SECTION INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION (<i>City and State</i>)	(3) ROLE
BRS Inc.	Riverton, WY	Site Investigation, Design, CM

The AML 6A-X Project encompassed 14 sites within the city limits of Rock Springs, Wyoming. The objective of the project was to eliminate hazardous conditions related to abandoned underground coal mines. The City of Rock Springs prioritized the sites according to hazards ranking and the need for affordable housing development within the city limits. Typical hazards include portals, subsidence, vertical shafts, and the potential for toxic and explosive gases. In addition, many of these undermined areas are currently in the planning stages for development. All of the sites are near inhabited areas and high recreational use areas. An initial phase of construction was completed at Canyon View Estates during the last week of July 2006. The construction included mass excavation and bulkheading of two subsided rooms that were under the west edge of an ongoing subdivision project. Investigations in Rock Springs included: city and landowner consents and coordination, appraisals, site mapping and hazard identification, exploratory drilling, and innovative hazard mitigation planning for 6 of the highest priority sites.

- 2 open portals and 8 covered portals will be excavated
- 6 open subsidence features and 16 individual shallow subsidence features will be dynamically compacted and closed.
- 4 areas with a high potential for subsidence including multiple subsidence features will be dynamically compacted.
- Two separate areas of shallow underground mining including approximately 15 rooms with associated haulages and crosscuts will be completely excavated out and backfilled.

Additional phases are currently being designed to complete similar work on the remaining project areas.

Macy's Truck Stop Subsidence:



Canyon View Evidence of Subsidence 5' Offset of Coal Seam:

Dynamic Compaction:



Benched-Down Excavation:



Canyon View Evidence of Subsidence 3' Offset of Coal Seam:

Canyon View Completed Site:



Kemmerer example excavation of 25' Wide 30' Long 5' Tall Room:

Backfilling and compacting of Excavated Room:



F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

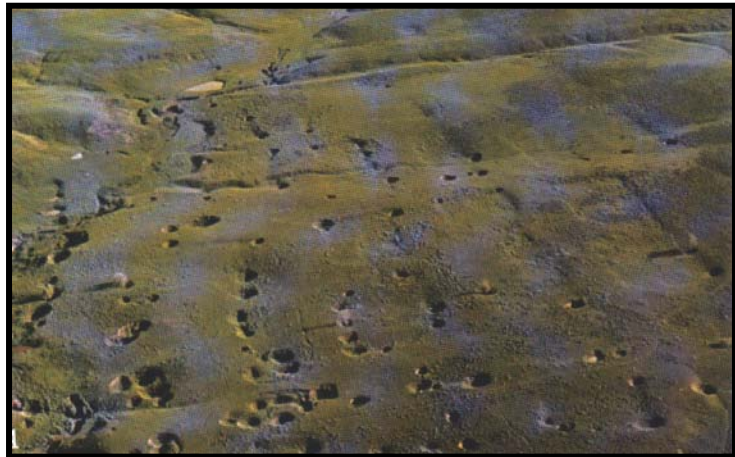
- A. EXAMPLE PROJECT KEY NUMBER: **AML 8-I Sean Carroll Subsidence Reclamation Project**
- B. TITLE AND LOCATION (*City and State*): **Sheridan County, Wyoming**
- C. YEAR COMPLETED - PROFESSIONAL SERVICES: **1998**
- D. YEAR COMPLETED - CONSTRUCTION (*If applicable*): **1998**
- 23a. PROJECT OWNER'S INFORMATION - PROJECT OWNER: **Wyoming AML**
- 23b. PROJECT OWNER'S INFORMATION - POINT OF CONTACT NAME: **Ernie Robb, AML Project Officer**
- 23c. PROJECT OWNER'S INFORMATION - POINT OF CONTACT TELEPHONE NUMBER: **307 473-8160**
- 24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (*Include scope, size, and cost*): **Follows**
- 25. FIRMS FROM SECTION INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION (<i>City and State</i>)	(3) ROLE
BRS Inc.	Riverton, WY	Site Investigation, Design, CM

A brief project description follows:

The Sean Carroll project included the Old Monarch, Kooi, Dietz and North Rim Ranch mine sites. The objective of the project was to eliminate hazardous conditions related to underground coal mine subsidence and to mitigate environmental degradation. Hazardous conditions existed due to unstable surface conditions, which could have resulted in the sudden collapse of the roof material overlying the mine drifts. There were numerous vertical and horizontal mine openings, which could have lead to the entrapment of people, wildlife and livestock as well. There was also the potential for toxic and explosive gases. As recently as 1979, several portions of these mines were subject to fires initiated by spontaneous combustion. The main focus of this project was to close the open mine shafts and adits. Over five hundred coal mine related subsidence features were reclaimed, of which thirty-four were extremely unstable and hazardous. A total of fifty-two acres were reclaimed and a surface drainage tributary to the Tongue River, which was captured by the mine subsidence, was restored along approximately a mile of its length. Three impoundments and associated grade control structures were constructed to stabilize the tributary. As an additional benefit the impoundments now provide surface water resources for both wildlife and livestock. The project was bid under a time and materials basis, and was completed ahead of schedule and 19% under budget.

Before Construction:



After Construction:



F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

A. EXAMPLE PROJECT KEY NUMBER: **AML 8-II Goose Creek Rehabilitation Project**

B. TITLE AND LOCATION (*City and State*): **Sheridan County, Wyoming**

C. YEAR COMPLETED - PROFESSIONAL SERVICES: **1999**

D. YEAR COMPLETED - CONSTRUCTION (*If applicable*): **1999**

23a. PROJECT OWNER'S INFORMATION - PROJECT OWNER: **Wyoming AML**

23b. PROJECT OWNER'S INFORMATION - POINT OF CONTACT NAME: **Ernie Robb, AML Project Officer**

23c. PROJECT OWNER'S INFORMATION - POINT OF CONTACT TELEPHONE NUMBER: **307 473-8160**

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (*Include scope, size, and cost*): **Follows**

25. FIRMS FROM SECTION INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION (<i>City and State</i>)	(3) ROLE
BRS Inc.	Riverton, WY	Site Investigation, Design, CM

The Goose Creek Project with respect to hydrology and NEPA issues was more difficult than most coal mine reclamation projects.

A brief project description follows:

The Goose Creek channel reconstruction required close coordination with land and mineral owners, and regulatory agencies including;

- The Big Horn Coal Company
- The Padlock Ranch
- Wyoming Department of Environmental Quality
- U.S. Army Corps of Engineers
- SHPO
- Wyoming Game and Fish

The project included rip rap and biotech bank stabilization and channel reconstruction of some 4 miles of Goose Creek above the confluence with the Tongue River. The project was completed in 44 days (90 day contract). The site is now a walk in recreation area for hunting and fishing. The project was nominated for a national OSM reclamation award.

KEY PROJECT REQUIREMENTS:

- **Consents and clearances**
- **404 wetland permitting**
- **Stream Diversion**
- **Rip Rap Placement**
- **Wetland Construction**
- **Channel Reconstruction**

Before Construction:



“Wyoming Rip Rap”

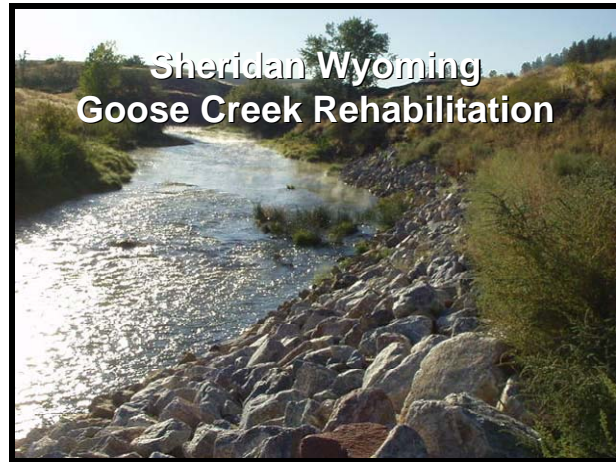


Historic Foot Bridge Acme No. 1 Mine

After Construction:



Rip Rap Protected Bank



Restored Channel

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

- A. EXAMPLE PROJECT KEY NUMBER: **AML 7E, Hanna Shallow Ground Water Control Project**
- B. TITLE AND LOCATION (*City and State*): **Hanna, Wyoming**
- C. YEAR COMPLETED - PROFESSIONAL SERVICES: **1996**
- D. YEAR COMPLETED - CONSTRUCTION (*If applicable*): **1996**
- 23a. PROJECT OWNER'S INFORMATION - PROJECT OWNER: **Wyoming AML**
- 23b. PROJECT OWNER'S INFORMATION - POINT OF CONTACT NAME: **Barry Shelley, AML Project Officer**
- 23c. PROJECT OWNER'S INFORMATION - POINT OF CONTACT TELEPHONE NUMBER: **307 473-1393**
- 24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (*Include scope, size, and cost*): **Follows**
- 25. FIRMS FROM SECTION INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION (<i>City and State</i>)	(3) ROLE
BRS Inc.	Riverton, WY	Site Investigation, Design, CM

The Hanna Shallow Ground Water Control Project is similar to typical coal mine reclamation projects with respect to certain aspects of site investigation and the need to understand past coal mining practices, but differs from most traditional AML projects in that the nature of the hazard is unique.

A brief project description follows:

The Hanna Shallow Groundwater Project required the design and construction of a passive gravity flow system to relieve elevated groundwater levels near foundations, roads, and other improvements. In addition to numerous private residences, the elevated groundwater conditions were impacting Hanna's recreation center and the town's only medical clinic. Since construction required placement of groundwater drains in the immediate proximity of the impacted area at depths of ten feet or more, numerous utility conflicts were encountered. In addition, the ground water conditions created unstable trench conditions. Despite these difficulties and the inherent public inconvenience of this type of project, construction was completed with very limited adverse public reaction. The project employed the principles of partnering and a substantial level of public participation. The project utilized state-of-the-art HDPE and geotextile drainage materials and was very successful in alleviating the identified problems. The recently completed Hanna Master Plan concluded through surveys of the public that the historic ground water problems were alleviated by the 7E project.

KEY PROJECT REQUIREMENTS:

- **Site investigation, design, and construction management**
- **Evaluation of elevated groundwater conditions related to coal mine dewatering**
- **Consents and clearances**
- **Public participation and partnering**
- **Utility and Highway crossings**

Ground Water Drain Discharge – Drains flow year round, even during winter months:



F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

- A. EXAMPLE PROJECT KEY NUMBER: **AML 17E Gebo Coal Reclamation Project, AML 8.1-1 Statewide Mine Inventory Project**
- B. TITLE AND LOCATION (*City and State*): **Hot Springs County, Wyoming**
- C. YEAR COMPLETED - PROFESSIONAL SERVICES: **2002**
- D. YEAR COMPLETED - CONSTRUCTION (*If applicable*): **N/A**
- 23a. PROJECT OWNER'S INFORMATION - PROJECT OWNER: **Wyoming AML**
- 23b. PROJECT OWNER'S INFORMATION - POINT OF CONTACT NAME: **Ernie Robb, AML Project Officer**
- 23c. PROJECT OWNER'S INFORMATION - POINT OF CONTACT TELEPHONE NUMBER: **307 473-8160**
- 24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (*Include scope, size, and cost*): **Follows**
- 25. FIRMS FROM SECTION INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION (<i>City and State</i>)	(3) ROLE
BRS Inc.	Riverton, WY	Site Investigation, Design

A brief project description follows:

The AML 17 E Project addressed underground mine features inventoried by BRS during the 8.1-1 Statewide Inventory Project. The objective of the project was to eliminate hazardous conditions related to underground coal mines located in the Gebo district. Typical hazards included portals, subsidence, mine spoils, hazardous equipment and facilities, and the potential for toxic and explosive gases. In addition, a mine is currently on fire in the district. The sites are located in a high recreational use area. BRS participated as a subconsultant to PHC Reclamation on AML 17 E, providing reclamation designs for open portals and subsidence, mapping of hazard features, and quantities estimation for coal slack removal and site grading. In addition, BRS provided cost estimation and authored the reclamation closure and earthworks sections of the Pre-Design report.

Multiple hazardous mine features remain unreclaimed in Hot Springs County of which BRS has direct knowledge due to completion of the inventory in this area.

Gebo Open Subsidence Capturing Drainage:



Gebo Open Subsidence:



Gebo Open Portal:



Gebo Open Portal:



Hot Springs County Mine Cart:



Hot Springs County Open Portal:



Gebo Open Portal:



Gebo Open Subsidence:



F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

- A. EXAMPLE PROJECT KEY NUMBER: **AML 17.32 Statewide Contracts**
- B. TITLE AND LOCATION (*City and State*): **Statewide Wyoming**
- C. YEAR COMPLETED - PROFESSIONAL SERVICES: **Ongoing**
- D. YEAR COMPLETED - CONSTRUCTION (*If applicable*): **Ongoing**
- 23a. PROJECT OWNER'S INFORMATION - PROJECT OWNER: **Wyoming AML**
- 23b. PROJECT OWNER'S INFORMATION - POINT OF CONTACT NAME: **George Boulter, AML Project Officer**
- 23c. PROJECT OWNER'S INFORMATION - POINT OF CONTACT TELEPHONE NUMBER: **307 777-6145**
- 24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (*Include scope, size, and cost*): **Follows**
- 25. FIRMS FROM SECTION INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION (<i>City and State</i>)	(3) ROLE
BRS Inc.	Riverton, WY	Site Investigation, Design, CM

Professional services provided by BRS implementing Statewide Contracts have been performed in coordination with George Boulter, AML and other AML Project Officers including Barry Shelley and Ernie Robb. It is likely that some of the sites within the **AML Fall 2006 Coal Projects** will be addressed in a similar manner. The purpose for statewide contracts and the difference between this approach and traditional projects is that the projects are completed quickly by implementing a scope of work rather than a site-specific set of plans and specifications through a bidding process. Brief descriptions of recent statewide contract projects follow:

Kent Mine (located southwest of Rock Springs, Wyoming):

The Kent mine consisted of 7 open and 6 covered portals at the base of a ridge adjacent to an ephemeral drainage. Coal slack and mine waste had been dumped into the drainage creating erosional instability and off-site environmental impacts. The BLM participated in the cost of construction due to the drainage impacts and provided all site clearance work. As part of the project, certain historic features were to be preserved. BRS worked with AML's designated archeologist to accomplish this requirement and in the course of construction encountered and preserved an additional feature not previously inventoried. This project included both mine closures and removal and disposal of unsuitable mine waste.



Excavated Portal (to competent roof and back)

Bulkhead Closure

Finish Grading

Burnright (located south and east of Medicine Bow, Wyoming):

The Burnright site consisted of one large open subsidence, 2 covered portals and 3 shallow subsidence features. Site work consisted of over-excavation of the open subsidence feature and when tested the portals and one of the closed subsidence features opened as well. Excavation proceeded to a competent roof and back. Any remaining openings were closed with local rock material to establish a

bulkhead. Backfill was completed with local material, compacted and mounded over the feature establishing positive drainage away from the site. Topsoil was salvaged and replaced. The site was broadcast seeded.



Open Subsidence



Compaction of Backfill



Topsoil Replacement/Grading

Monarch (located north east of Sheridan, Wyoming near the historic town of Monarch):

The Monarch subsidence occurred along a shallow portion of the main haulage of the Old Monarch mine. The initial surface expression of subsidence included 4 separate open or partially open subsidence features. The features were excavated revealing interconnection of the workings and in the course of work two additional features were located and closed. In total 1 acre was affected. Following excavation, the subsidence features were backfilled with waste scoria from a local quarry to establish a bulkhead and site backfill was completed with compacted local fill materials prior to replacement of topsoil and reseeding.



Open Subsidence



Excavation



Final Graded Surface

Hanna No. 4:

During the investigation phase of the Hanna No.4 project, a large open subsidence feature was located in the field by BRS personnel. Due to its immediate proximity to Hanna the site feature was addressed by mass excavation. The surface expression of subsidence occurred at the intersection of a main haulage tunnel and two perpendicular lateral tunnels. The tunnels were collapsed to the extent possible, then backfilled with compacted local materials. Permanent bulkheads were not established as future project work will re-affect this area.



Open Subsidence >35 Feet Deep



Excavation in progress



Finished Grade

H. ADDITIONAL INFORMATION

29. PROVIDE ANY ADDITIONAL INFORMATION REQUESTED BY THE AGENCY. ATTACH ADDITIONAL SHEETS AS NEEDED:

I. INTRODUCTION

BRS specializes in mining, mine land reclamation, and geological projects similar to the 2011 AML Coal Projects. Since 1986, BRS has completed key technical and managerial roles on approximately 100 mine reclamation projects. The proposed Project Manager, Harold Hutson, has progressive work experience over the past 16 years in all aspects of mine land reclamation including site investigation, design and construction. This experience includes such projects as the 17H Statewide Coal Project, AML17J Northeast Coal, and both Statewide Mine Inventory projects. With respect to the potential sites for the Large Mine P3 Coal Reclamation Projects, BRS participated has direct on-site experience with all of the Carbon and Sheridan County sites with AML and have familiarity with the Campbell and Converse County sites through other work experience. In addition to on-site familiarity, BRS is the only firm that has successfully employed “Natural Regrade” design and construction for large coal reclamation sites in the state.

BRS strives to be innovative and responsive to our clients needs in all our projects. Recent innovative approaches, in the field of coal reclamation, pioneered by BRS include:

- The use of historic mine mapping to locate and identify potential hazard areas;
- Development and demonstration of cost-effective means of controlling mine fires;
- Implementation of proactive subsidence mitigation through mass excavation in areas with shallow cover; and
- Implementation of the application of “Natural Regrade” geomorphic reclamation techniques in mine land reclamation.

Through our past and current projects BRS has demonstrated the knowledge, experience, skills and effort necessary to;

- incorporate local conditions into surface water hydrology designs;
- incorporate natural features and aesthetic enhancements into earthworks design;
- define and direct the identification, segregation, and selective handling of materials;
- respond timely to any changes in conditions, keeping construction projects on track and avoiding claims;
- integrate reclamation designs with adjacent reclamation and native terrain; and
- when necessary and appropriate, negotiate with land owners, mineral owners, LQD, and land management agencies to achieve the most effective reclamation approach with respect to cost and long term stability and environmental enhancement.

These abilities have been learned through progressive experience with similar projects and are specifically reflected in the professionalism of our personnel. BRS personnel have extensive knowledge and experience in geology, geochemistry, civil and mine engineering, environmental permitting and mine land reclamation. This experience encompasses a variety of projects and locations including: reconnaissance and hazard prioritization; AML eligibility determination; site investigation; conceptual design; final design; preparation of plans and specifications; environmental permitting; and construction management.

BRS maintains state of the art equipment for computer aided design and drafting, computer modeling, GIS, GPS surveying, and soils testing. In addition, BRS maintains an extensive library of mining and geologic data including databases, reports, and mine maps.

BRS Inc. is a Wyoming Corporation duly licensed as a Professional Engineering Corporation, which has provided consulting services for more than twenty-five years in geology, civil engineering, water resources, mining, and mined land reclamation including all aspects of environmental permitting, design and construction management. BRS’ main office is located in Riverton, Wyoming.

9. AUTHORIZED REPRESENTATIVE
The foregoing is a statement of facts.

30. SIGNATURE OF AUTHORIZED REPRESENTATIVE:

31. DATE SIGNED: **March 31, 2011**

32. NAME AND TITLE OF SIGNER: **Douglas Beahm, Principal Engineer and President**

ARCHITECT-ENGINEER QUALIFICATIONS

PART II - GENERAL QUALIFICATIONS

(If a firm has branch offices, complete for each specific branch office seeking work.)

1. SOLICITATION NUMBER *(If any)*: **Wyoming AML Fall Procurement – Uranium Projects**

2a. FIRM (OR BRANCH OFFICE) NAME: **BRS Inc.**

2b. FIRM (OR BRANCH OFFICE) STREET: **1225 Market**

2c. FIRM (OR BRANCH OFFICE) CITY: **Riverton**

2d. FIRM (OR BRANCH OFFICE) STATE: **Wyoming**

2e. FIRM (OR BRANCH OFFICE) ZIP CODE: **82501**

3. YEAR ESTABLISHED: **1986**

4. DUNS NUMBER: **008454316**

5a. OWNERSHIP - TYPE: **Private Corporation**

5b. OWNERSHIP - SMALL BUSINESS STATUS:

6a. POINT OF CONTACT NAME AND TITLE: **Douglas Beahm**

6b. POINT OF CONTACT TELEPHONE NUMBER: **307 857 3079**

6c. POINT OF CONTACT E-MAIL ADDRESS: **brs@bresnan.net**

7. NAME OF FIRM *(If block 2a is a branch office)*:

8a. FORMER FIRM NAME(S) <i>(If any)</i>	8b. YR. ESTABLISHED	8c. DUNS NUMBER

