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NORTH  
AMERICAN  
EQUITIES, Ltd.

*Mine file  
R. Harder*

*007/02102*

November 16, 1987

Lowell P. Braxton  
Administrator  
Mineral Resource Development & Reclamation Program  
State of Utah Natural Resources  
355 W. North Temple  
3 Triad Center, Suite 350  
Salt Lake City, UT 84180-1203

Dear Lowell:

Enclosed is a letter describing the engineering requirements relating to stipulations for our reclamation plan for Blazon. Please review and respond to me as to the adequacy of the scope of this work.

This is needed by North American Equities, Ltd. to insure we understand the requirements and contract for those requirements accordingly.

Best Regards,

NORTH AMERICAN EQUITIES, LTD.

*Alan W. Smith*  
*crd*

Alan W. Smith  
President

AWS:crd  
Encl.

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DIVISION OF  
OIL, GAS & MINING

November 11, 1987

Mr. Alan Smith  
North American Equities, Ltd.  
Snow Mountain Development  
316 Crow Canyon Road, Suite 210  
San Ramon, CA 94583

Subject: Engineering Services for Little Snider Canyon Drainage,  
Blazon Mine, Carbon County, Utah.

Dear Mr. Smith:

As per your request, we have outlined below the scope of our services performed to date on the above project and, in addition, a proposed scope of work based on changed conditions at the site. We were informed of these changed conditions by Mr. Randy Hardin of the Division of Oil Gas and Mining (DOGM) at our meeting with them on this date, following his site visit of the previous day (11/10/87).

Our work completed to date has consisted of:

- 1) an initial site visit (11/3/87) with inspection of the existing site conditions and estimated subsurface conditions beneath the coal refuse within the drainage;
- 2) a meeting with Rick Sommers and Randy Hardin, DOGM's representatives, presenting our interpretations of the site surface and subsurface conditions and presenting our proposed design concept to deal with these conditions and thus satisfy DOGMs' requirements for the slope stability and reclaimed, drainage design;
- 3) Perform slope stability analysis, with the slope configuration to be coordinated with the reclaimed channel design;
- 4) prepare preliminary, plans (five sheets) and supportive documentation and specifications (50 pages) of sufficient detail to satisfy the intent to comply with the stipulation;

Note: Our basic assumptions for the slope analysis and channel design were that the existing visible slopes would project down at the same approximate angle to the drainage base underlying the refuse; that bedrock would not be encountered by the refuse removal, and that the refuse extended to the top of the existing culvert, located in the drainage base.

- 5) Items 3 and 4 were to be presented to DOGM by 11/6/87, which was later extended to 11/9/87;

Our total, agreed upon amount with you for performing the above services was \$4500.

The changed site conditions, based on DOGMs' site visit, consist mainly of, 1) more gently sloping drainage walls than originally assumed and, 2) about five feet of native soil fill over the culvert, at the mouth of the drainage. This elevation can be used as the design drainage base.

The following proposed scope of work is presented to accomodate these changed conditions:

- 1) survey the present stream gradient and side slopes;
- 2) perform stability analysis on exposed slopes;
- 3) prepare preliminary drawings incorporating the following changes due to the existing site conditions;
  - a) decrease the stream gradient, using the five feet of fill in-place, thus lowering the design velocity and eliminating the need for a series of constructed energy dissapators in the channel;
  - b) add large rip rap at the bedrock step just above the existing 24 in. culvert inlet, to serve as the main energy dissapator;
  - c) elevate the concrete box, energy dissapator at the drainage mouth, thus lowering design requirements for this feature;
  - d) raise the depth of burial of the design, large diameter culvert to be placed in the pad, to the 2 1/2 foot minimum burial cover;
  - e) reduce design requirements of the bank protection or concrete energy dissapator at the above culvert outlet into Mud Creek;
  - f) use a 50 year precipitation event for the design runoff rather than the 100 year event used in the original design.

The above design changes should result in a significant lowering of the final construction costs.

Our cost estimate to perform the above services is not to exceed \$350.00 for the stability analysis and \$        for the surveying, preparation of preliminary design drawings and supportive documentation, for a total of \$.

An extension of the time limits allows us to present a concept sketch

of the design to DOGM for their review and comments prior to beginning the drawings, to avoid or minimize revisions of the drawings.

We will proceed with the above on your approval.

Please contact us if there are any questions on the above.

Sincerely  
LGS ASSOC., INC.

PRICE ASSOC., ENGINEERS

LaMonte G. Sorenson  
Principal

Terry Price, P.E.  
Principal