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DIVISION OF
OIL, GAS & MINING

June 23, 1989

Mr. Lynn Kunzler
Utah Division of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180

Subject: Blazon No. 1 Mine Planting

Dear Mr. Kunzler:

Enclosed is a copy of the summary report entitled "Initiation of Woody Plant Survival Studies on the Blazon Mine Reclamation Area" prepared by Mr. Patrick Collins of Mt. Nebo Scientific.

We will include this report in an appendix of the revised Reclamation As-Built report. In addition, the location of the transects will be clearly defined on a revised drawing.

Please contact us if you have any questions or need additional information.

Sincerely,

Carol A. Bjork

Carol A. Bjork, P.E.
Civil Engineer

Enclosure

cc: Bill Prince (Holme, Roberts & Owen, w/o enclosure)
Alan Smith (NAE, w/o enclosure)

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INITIATION OF WOODY PLANT SURVIVAL STUDIES
ON THE BLAZON MINE RECLAMATION AREA

by
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METHODS

Field work for initiation of a study for woody plant survival and density was accomplished on June 12, 1989 for the Blazon Mine reclamation area near Clear Creek, Utah. The area was planted with two seed mixes in the fall of 1988 and containerized woody plant species in the spring of 1989 by another contractor.

The study site was divided into 5 separate areas: 1) Reclaimed Transformer Road, 2) Reclaimed Portal Slope & Road, 3) Reclaimed Culvert Area, 4) Sediment Pond and 5) Riparian Planting areas. Belt transects were randomly placed on each of these areas. With the exception of the Riparian areas, only one belt transect was placed within each of the five areas. Because the riparian areas were so variable with respect to location and planting clusters, five transects were placed (A-E). The size of the transects varied throughout all areas of the study site, based on the size of the sample area and the number of woody plants to be monitored. The number of woody plants to be monitored in each area was determined by the State of Utah, Division of Oil, Gas, and Mining (DOG M). Once the size and parameters of the transects were established, the workers walked the transect marking each woody plant species with an 18 inch wooden stake. The species name was written on each stake using the first two letters of the genus and species name (e.g. Po tr = Populus tremuloides). After each woody plant was located, identified, and marked, notes were recorded on the "vigor" of each individual. The following abbreviations and categories were used for qualitative assessment of species vigor. "V" (vigorous)

was used if the individual appeared very healthy, green and seemed to have established well. "M" (marginal) was used for individuals that appeared to alive, but had some indications of stress and/or shock i.e. loosing or browning of leaves. "F" (feeble) was recorded if the individual appeared brown in color or nearly dead, but remained alive (still had "green" or active vascular transport in the stem). A "D" (dead) rating was given if the individual had obviously not survived the transplantation techniques or the subsequent establishment period.

One important point should be mentioned in the methods of this study. It had been some time (approximately 1 month) between transplant dates and initiation of this study when data were recorded. We marked only the individuals that we found at the time of sampling. The area had had precipitation prior to our sampling dates which made it difficult to positively identify individual transplant locations if plants were not in that spot. In other words, some individuals had undoubtedly expired and left with no sign for data in this study. Therefore, for total percent survival of all transplanted individuals, the results may be somewhat biased. However, future cover and density studies will provide adequate measures for reclamation success. Furthermore, since each individual was permanently marked in this study, monitoring will be possible on the exact same individuals for several years.

Locations of each transect were identified on the enclosed map. Approximate sizes of these transects can also be ascertained from the map or measured in the field. Photographs of planting areas and plant species were also taken.

RESULTS

Listed below are the results from the initial woody plant seedling study conducted at the Blazon Mine reclamation area. The sampling was done on June 12, 1989. Refer to "METHODS" for details of sampling methodologies.

	No.	Percent
1. RECLAIMED TRANS-FORMER ROAD		
Ma re*, Vigorous	0	(0.0%)
Marginal	1	(2.0%)
Feeble	15	(30.0%)
Ps me*, Vigorous	0	(0.0%)
Marginal	6	(12.0%)
Feeble	28	(56.0%)
	50	(100.0%)
2. RECLAIMED PORTAL SLOPE & ROAD		
Ac gl*, Vigorous	0	(0.0%)
Marginal	24	(48.0%)
Feeble	24	(48.0%)
Dead	2	(4.0%)
	50	(100.0%)
3. RECLAIMED CULVERT A AREA		
Ma re, Vigorous	0	(0.0%)
Marginal	2	(8.0%)
Feeble	4	(16.0%)
Ps me, Vigorous	3	(12.0%)
Marginal	14	(56.0%)
Feeble	2	(8.0%)
	25	(100.0%)

4. SEDIMENT POND

Ma re, Vigorous	0	(0.0%)
Marginal	0	(0.0%)
Feeble	6	(24.0%)
Ps me, Vigorous	1	(4.0%)
Marginal	2	(8.0%)
Feeble	16	(64.0%)
	<hr/>	<hr/>
Total	25	(100.0%)

5. RIPARIAN PLANTING

RIPARIAN A

Salix*, Vigorous	1	(10.0%)
Marginal	5	(50.0%)
Feeble	4	(40.0%)
	<hr/>	<hr/>
Subtotal	10	(100.0%)

RIPARIAN B

Co se*, Vigorous	2	(20.0%)
Marginal	1	(10.0%)
Feeble	0	(0.0%)
Po tr*, Vigorous	2	(20.0%)
Marginal	2	(20.0%)
Feeble	1	(10.0%)
Salix, Vigorous	0	(0.0%)
Marginal	2	(20.0%)
Feeble	0	(0.0%)
	<hr/>	<hr/>
Subtotal	10	(100.0%)

RIPARIAN C

Co se, Vigorous	0	(0.0%)
Marginal	0	(0.0%)
Feeble	0	(0.0%)
Po tr, Vigorous	1	(10.0%)
Marginal	2	(20.0%)
Feeble	0	(0.0%)
Salix, Vigorous	5	(50.0%)
Marginal	1	(10.0%)

Feeble	1	(10.0%)
Subtotal	10	(100.0%)

RIPARIAN D

Co se, Vigorous	0	(0.0%)
Marginal	0	(0.0%)
Feeble	0	(0.0%)
Po tr, Vigorous	5	(50.0%)
Marginal	0	(0.0%)
Feeble	0	(0.0%)
Salix, Vigorous	2	(20.0%)
Marginal	2	(20.0%)
Feeble	1	(10.0%)
Subtotal	10	(100.0%)

RIPARIAN E

Co se, Vigorous	0	(0.0%)
Marginal	0	(0.0%)
Feeble	0	(0.0%)
Po tr, Vigorous	0	(0.0%)
Marginal	4	(40.0%)
Feeble	6	(60.0%)
Salix, Vigorous	0	(0.0%)
Marginal	0	(0.0%)
Feeble	0	(0.0%)
Subtotal	10	(100.0%)
Total	50	(100.0%)

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- * Ac gl = Acer glabrum (Rocky Mountain Maple)
Co se = Cornus sericea (Red-osier Dogwood)
Ma re = Mahonia repens (Oregon Grape)
Po tr = Populus tremuloides (Aspen)
Pr vi = Prunus virginiana (Chokecherry)
Ps me = Pseudotsuga menziesii (Douglas Fir)
Salix = Salix sp. (Willow)